TECHNOLOGY DEPT.

Gas Journal

VOL. 285. 108th YEAR. LONDON, JANUARY 4, 1956. No 4831. PRICE 1/6

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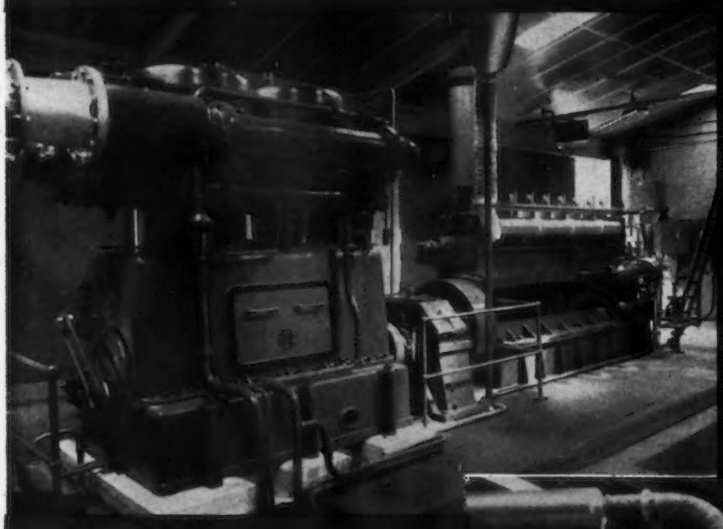

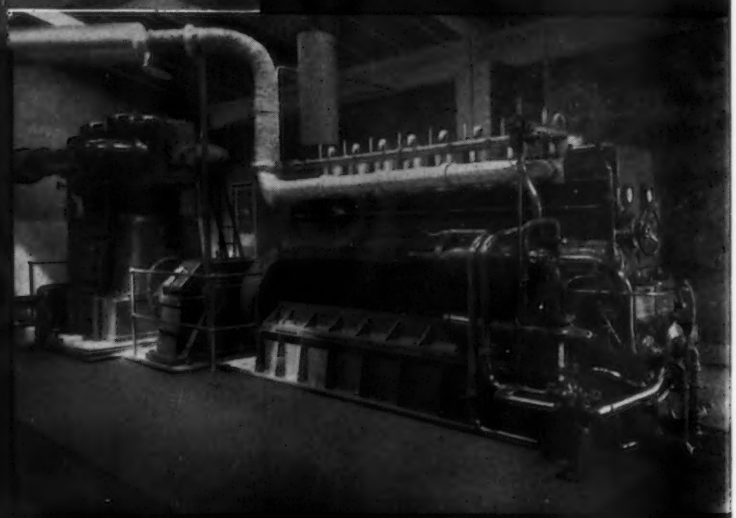

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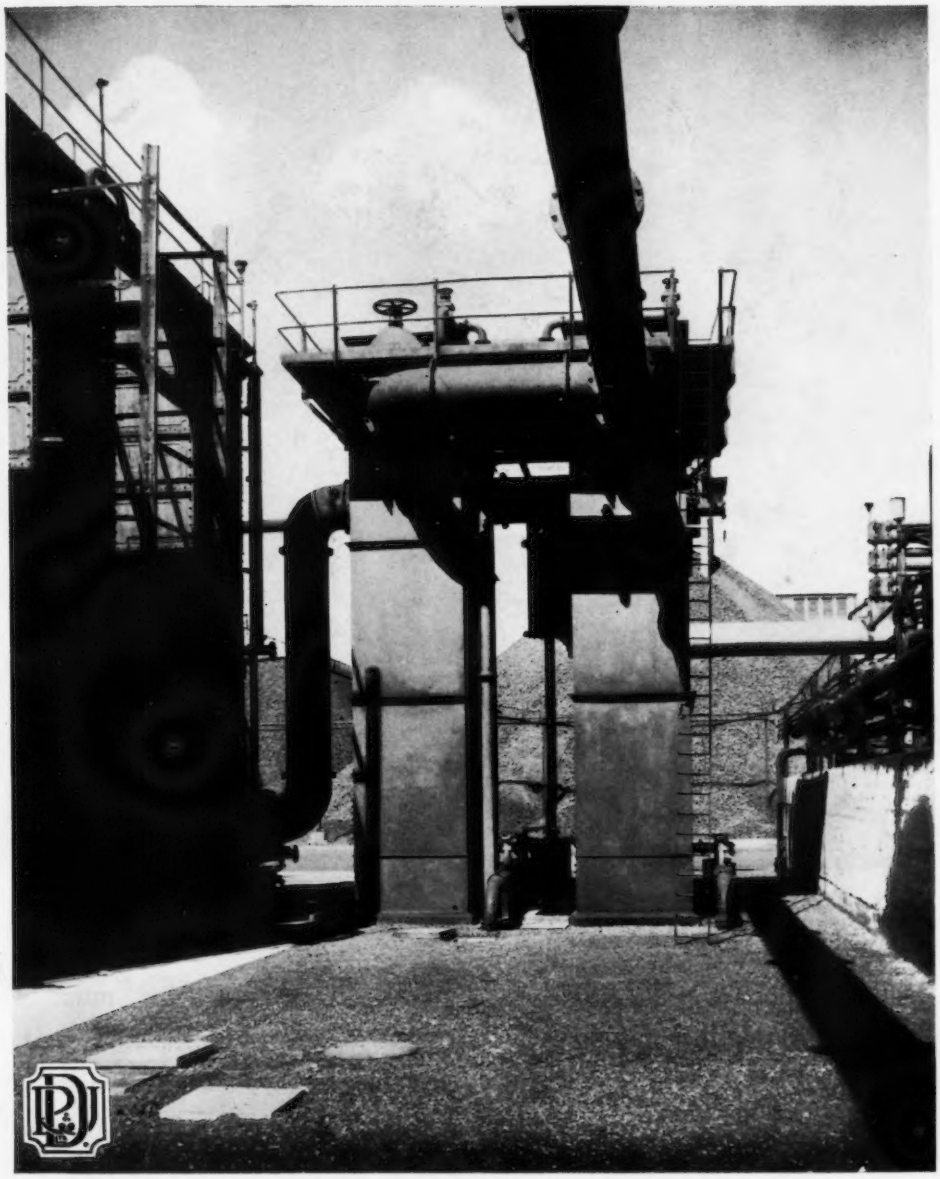

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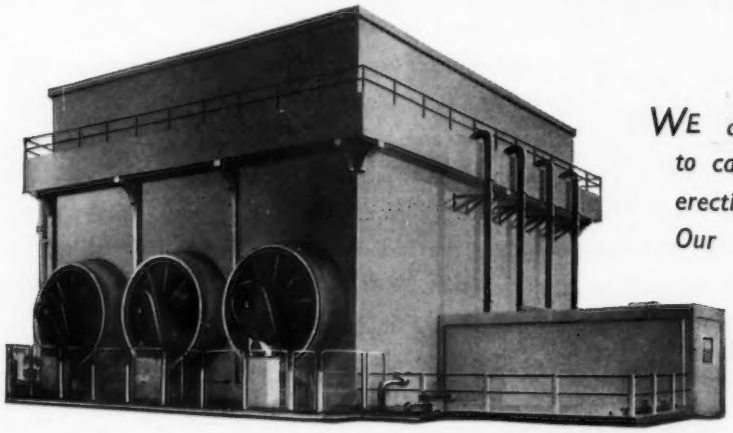

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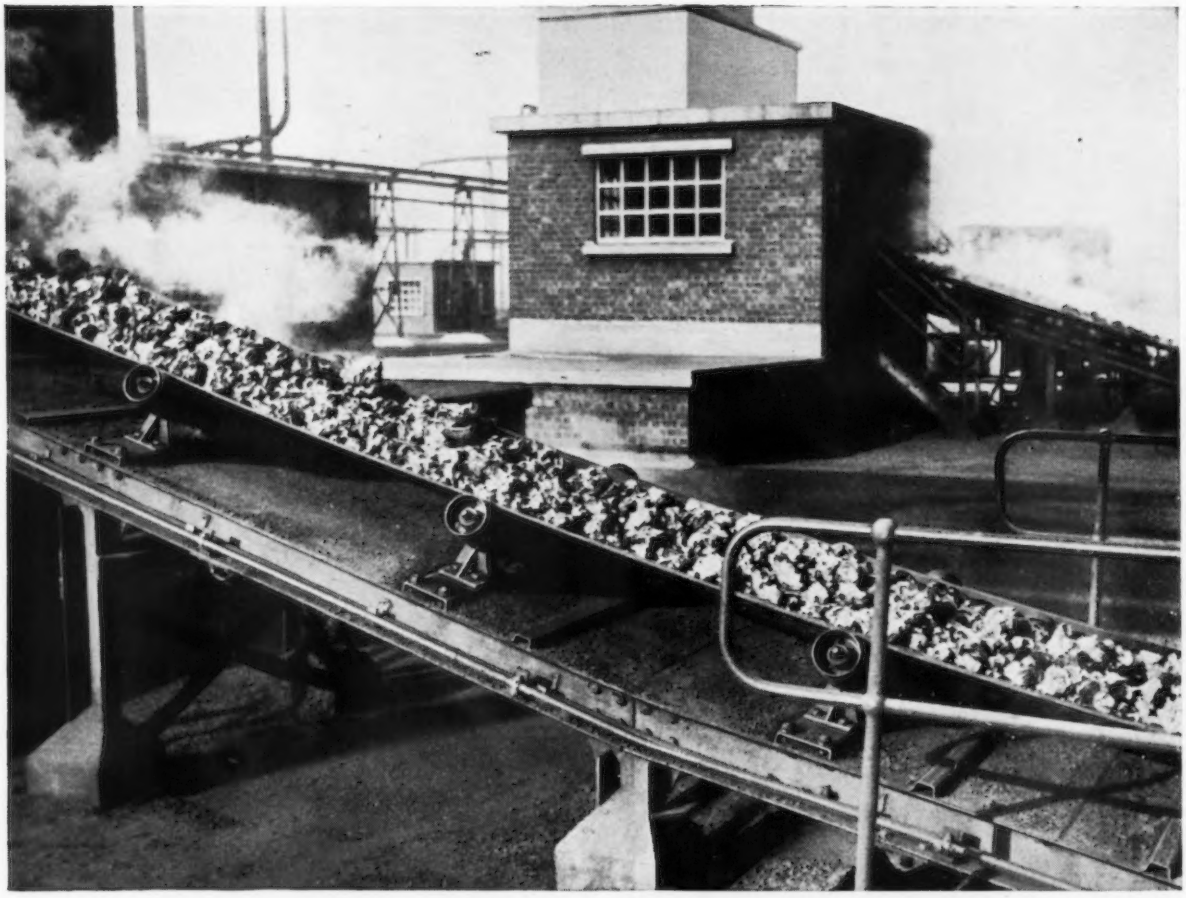

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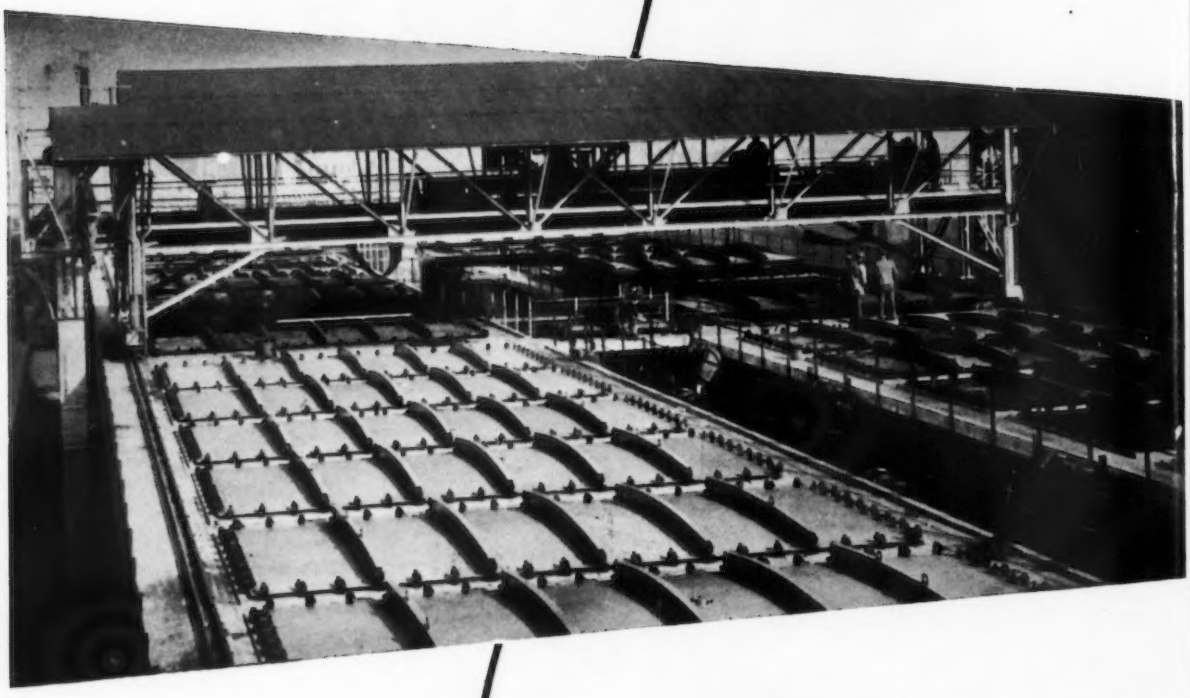

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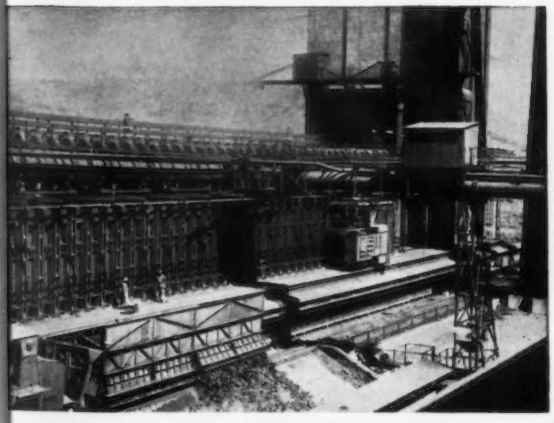
COKE OVEN DOORS

Examples of another of the many uses for REFRACTORY CONCRETE

Shelton Iron & Steel Co. Ltd., Refractory Concrete door linings ready for installation.



South African Iron & Steel Industrial Corporation Limited have 109 oven doors lined with Refractory Concrete. All charging hole inserts are repaired with refractory concrete.

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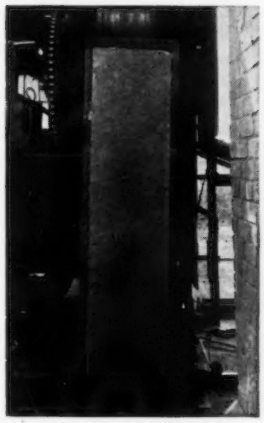
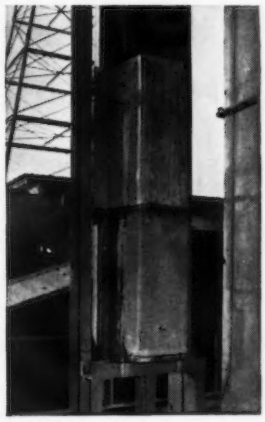


South Eastern Gas Board, East Greenwich Gas Works, Lining coke oven door in situ



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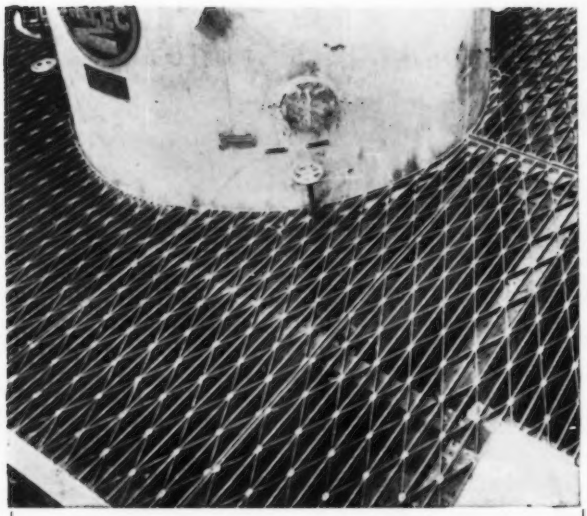

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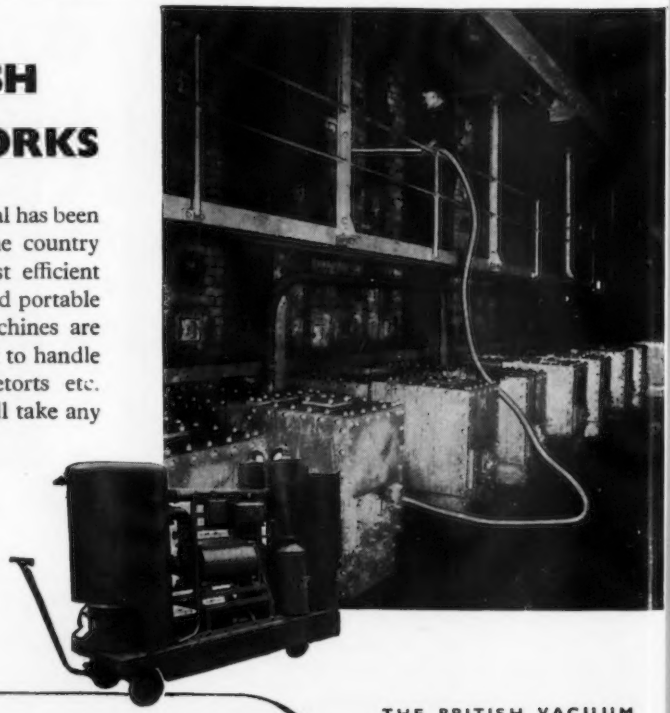
The illustration shows Redditch Gas works where a portable B.V.C. machine operates through an installed pipe system. Full particulars of these and other installations on request.



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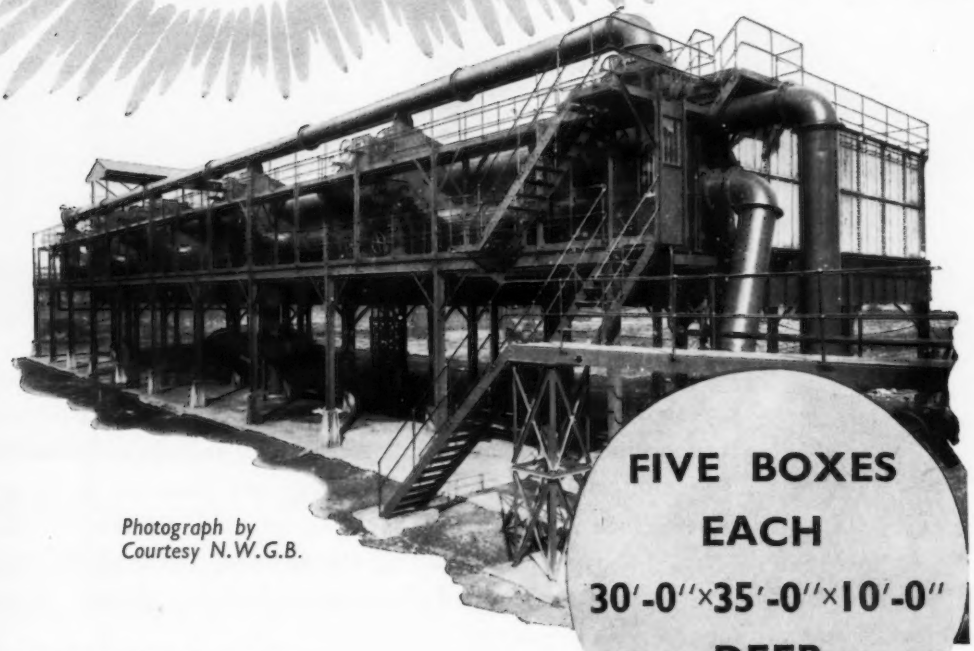

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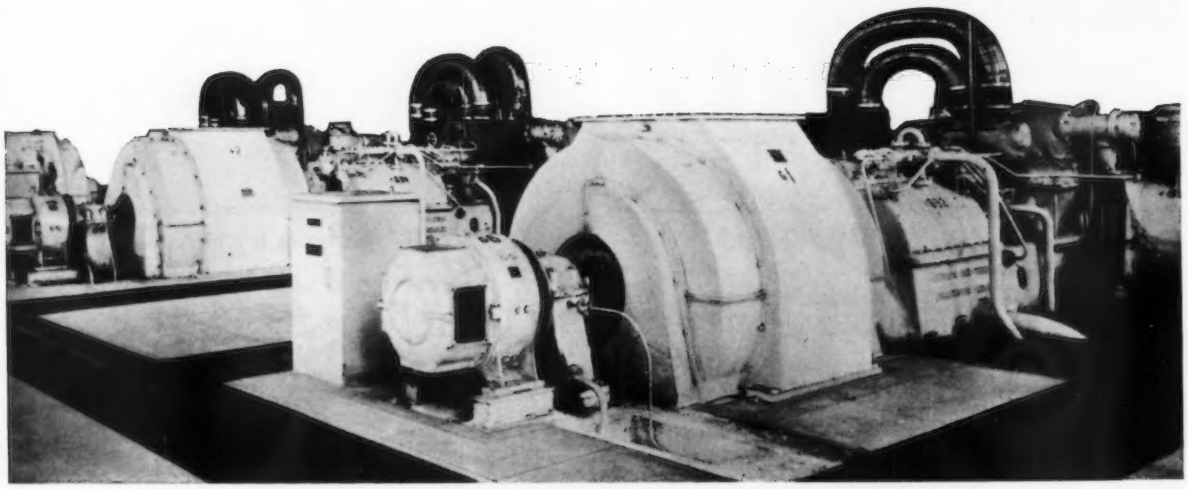

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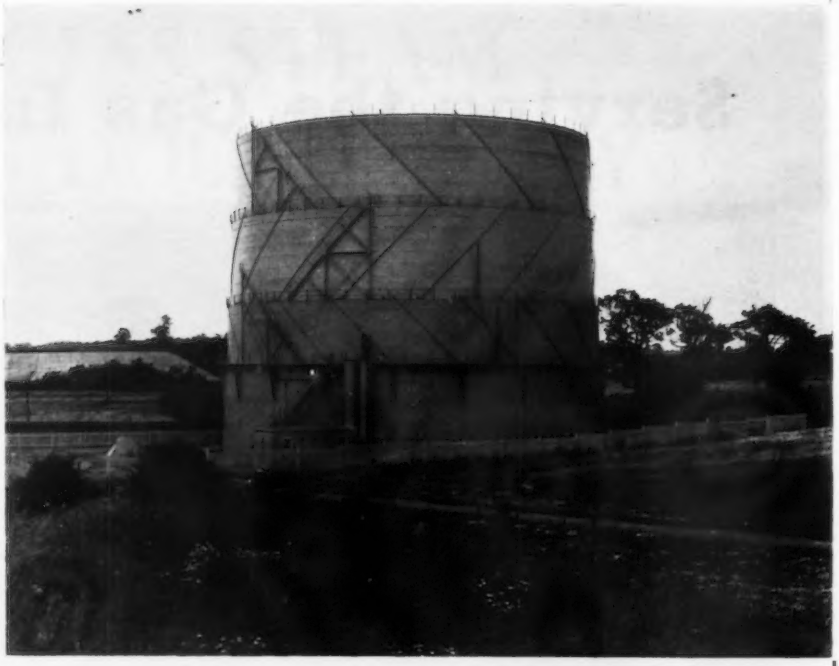

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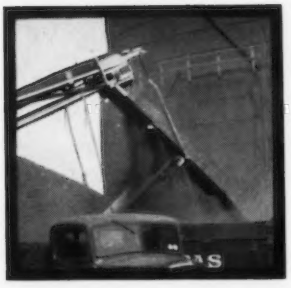

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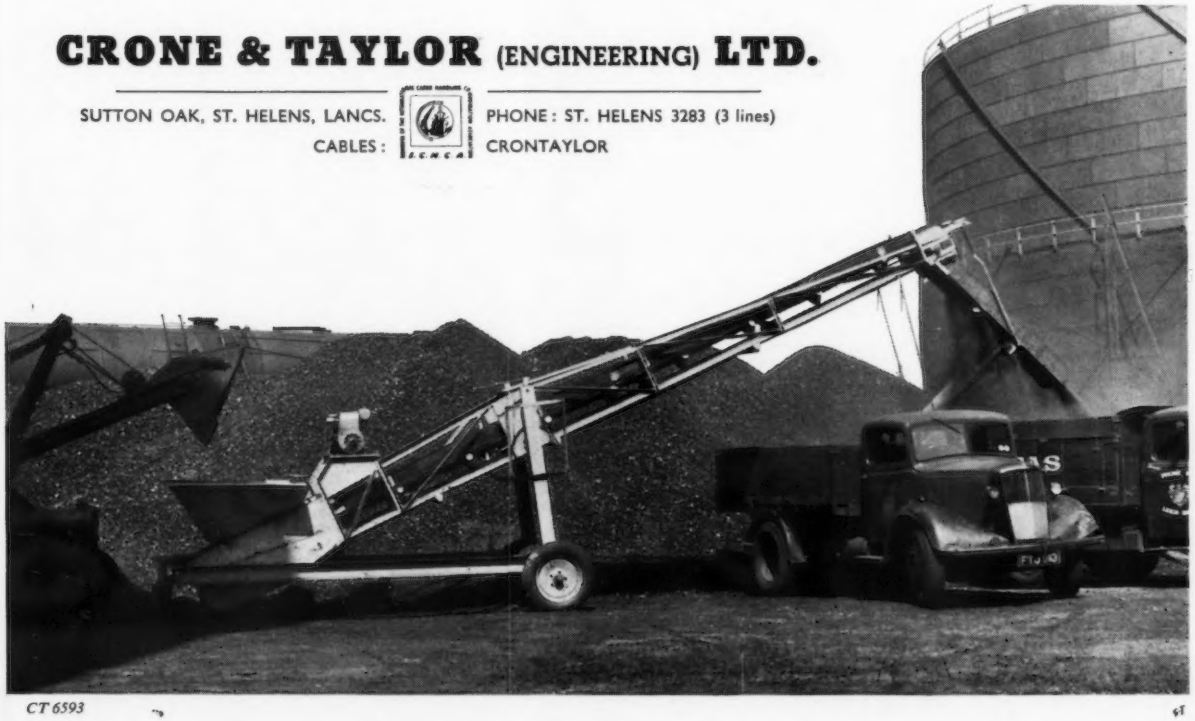

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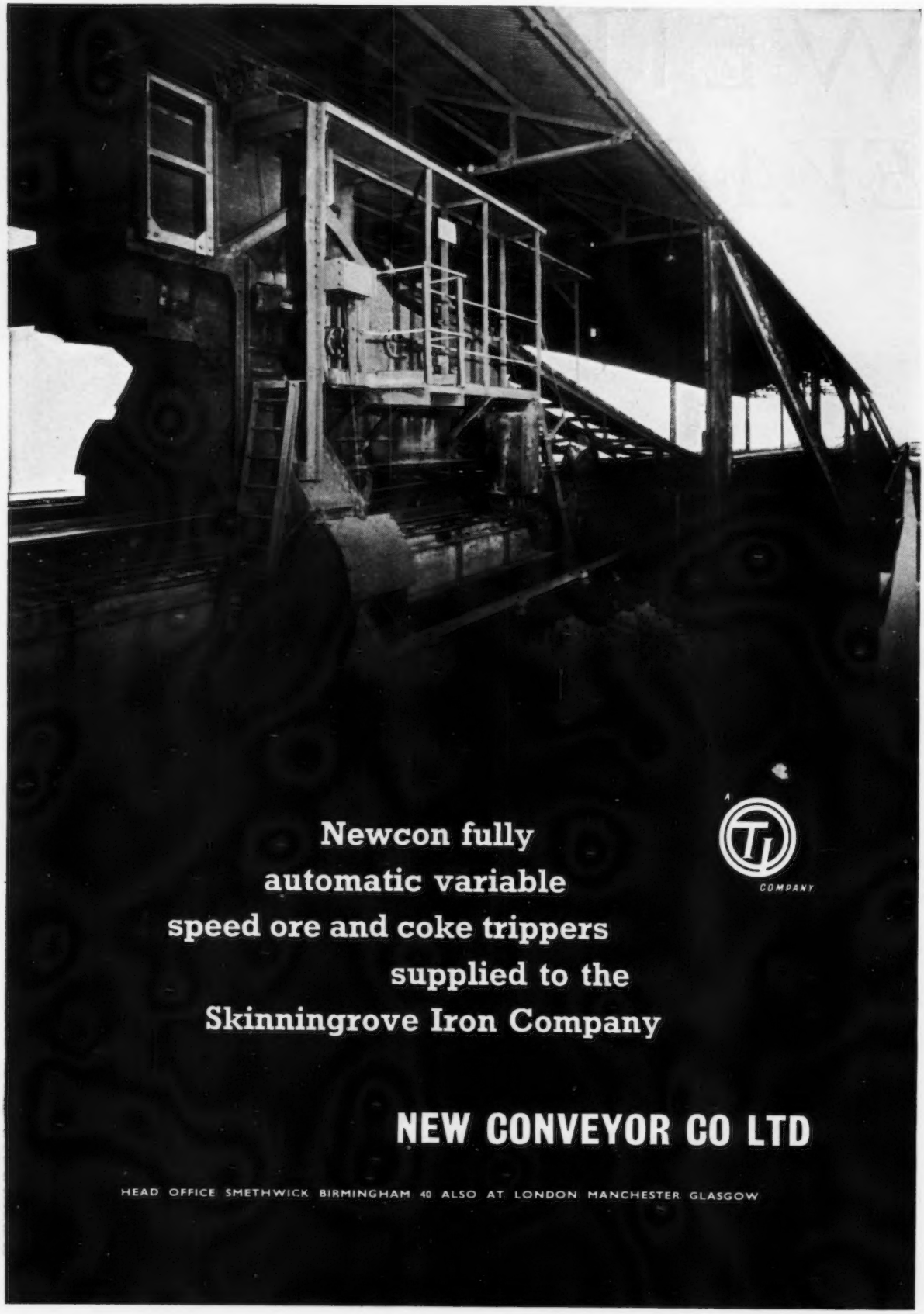
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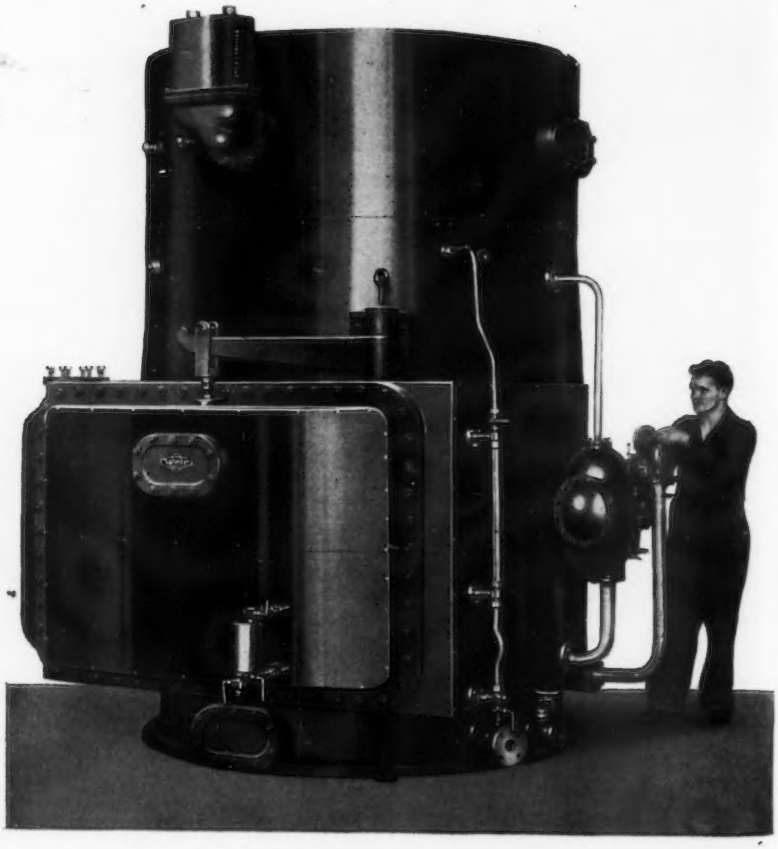

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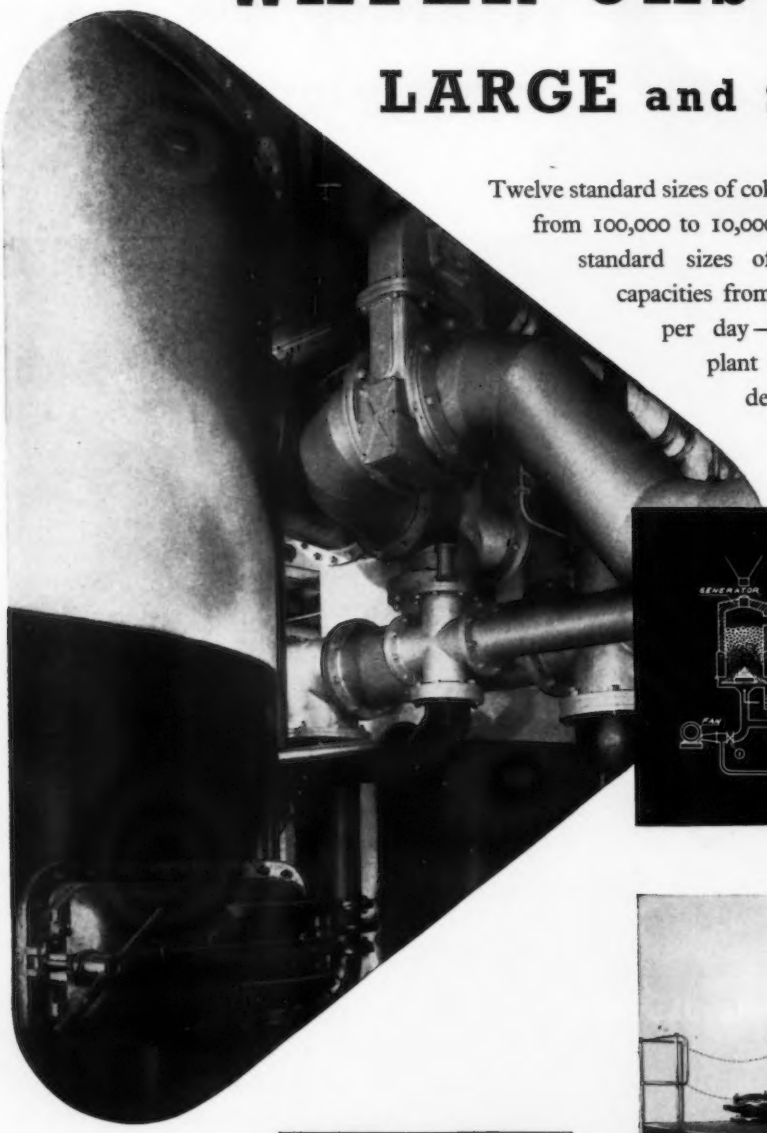

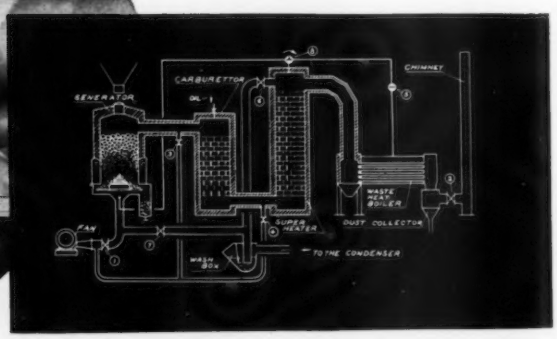

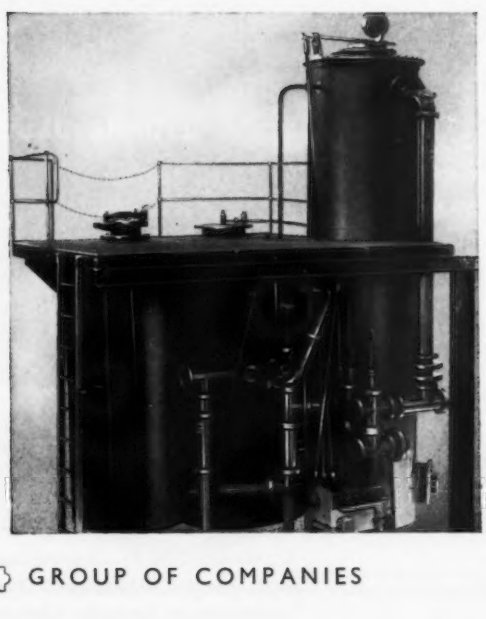

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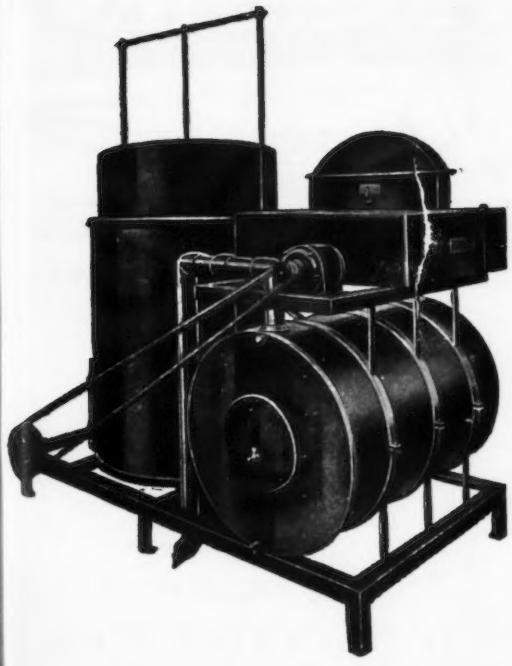

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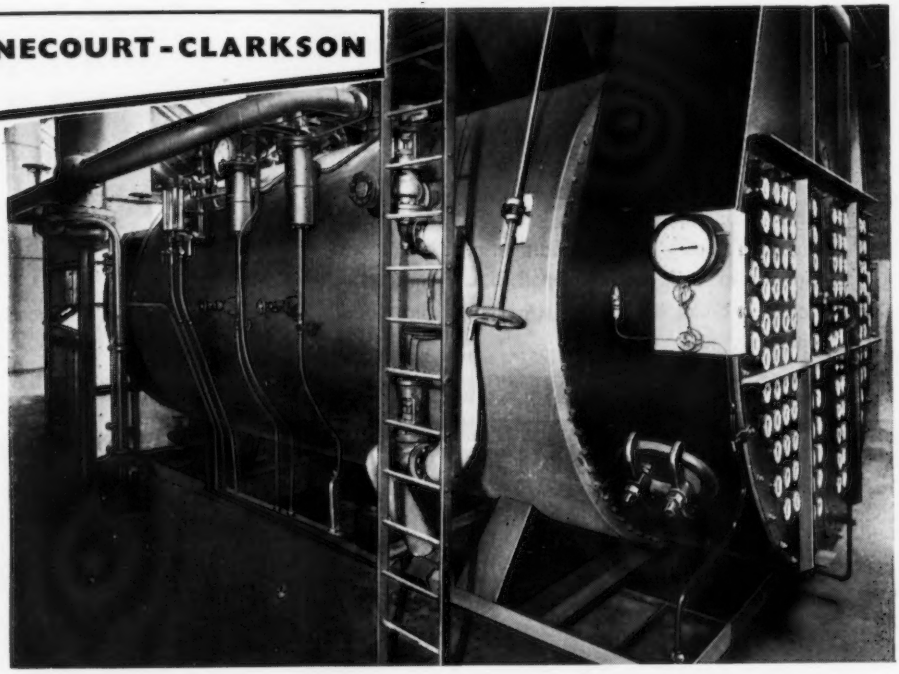

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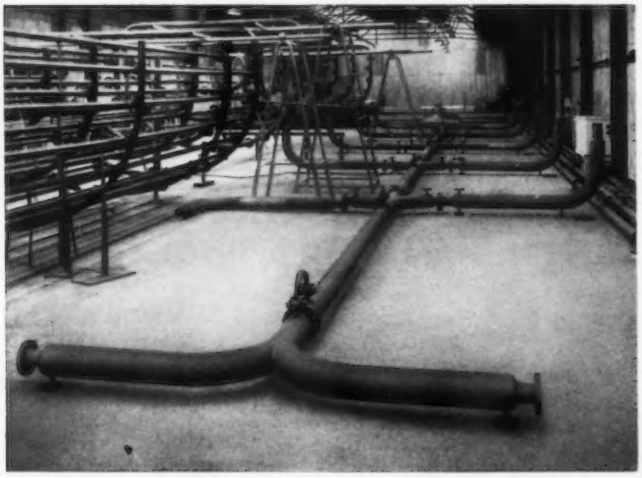

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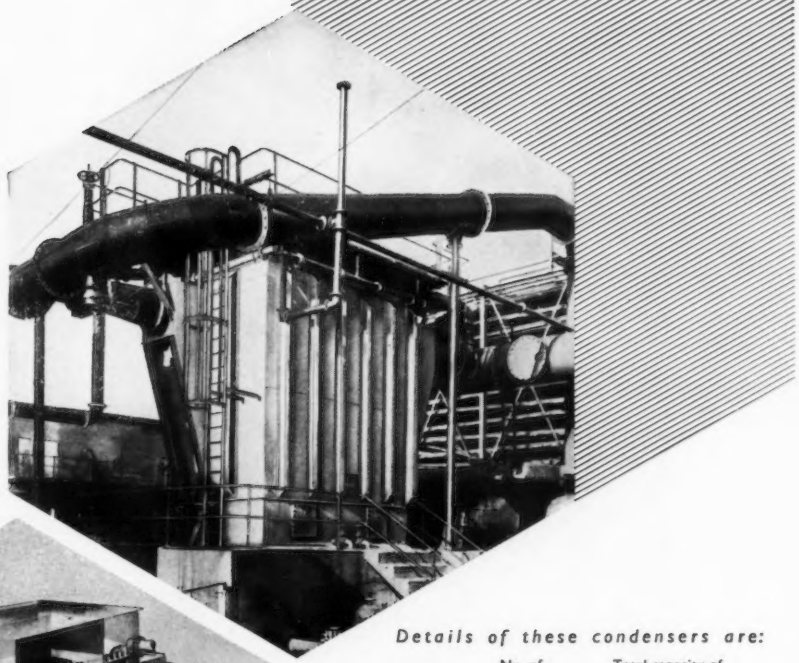

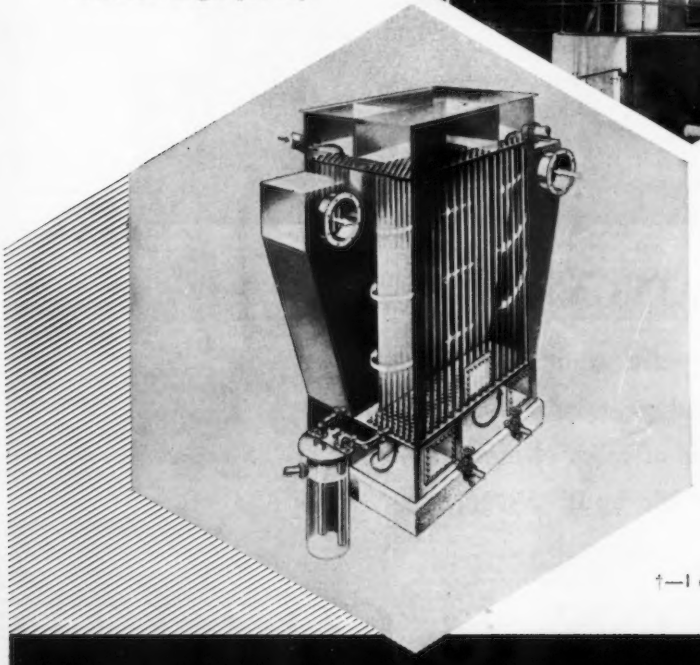

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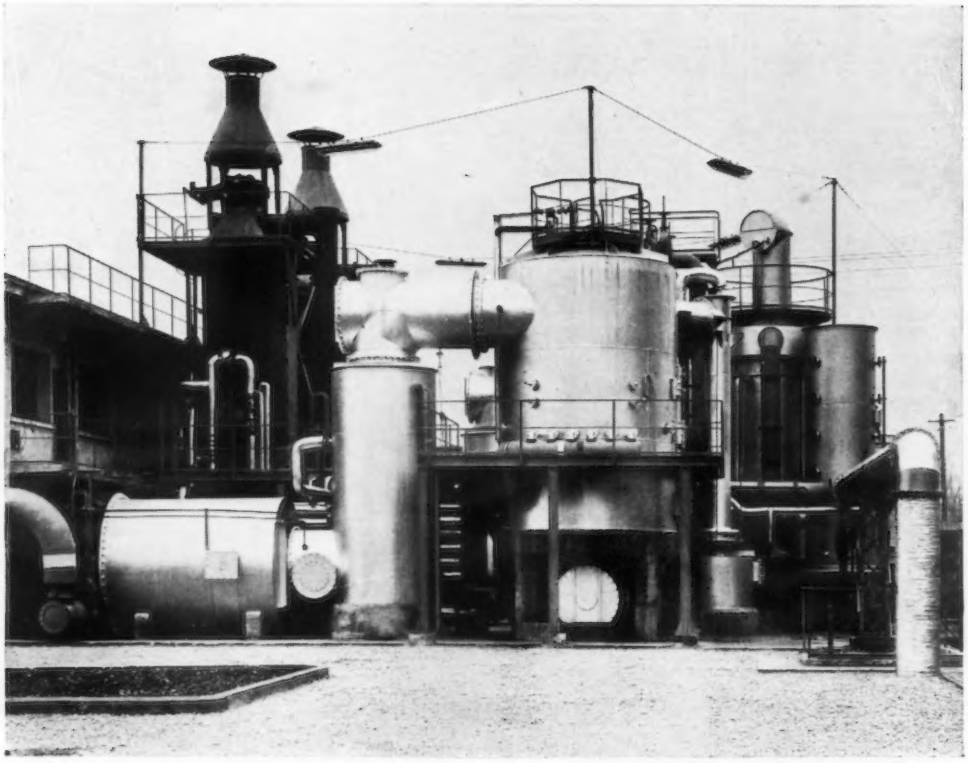

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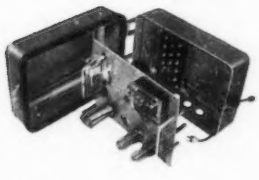

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Gas Journal

VOL. 285 NO. 4831 January 4, 1956

108TH YEAR

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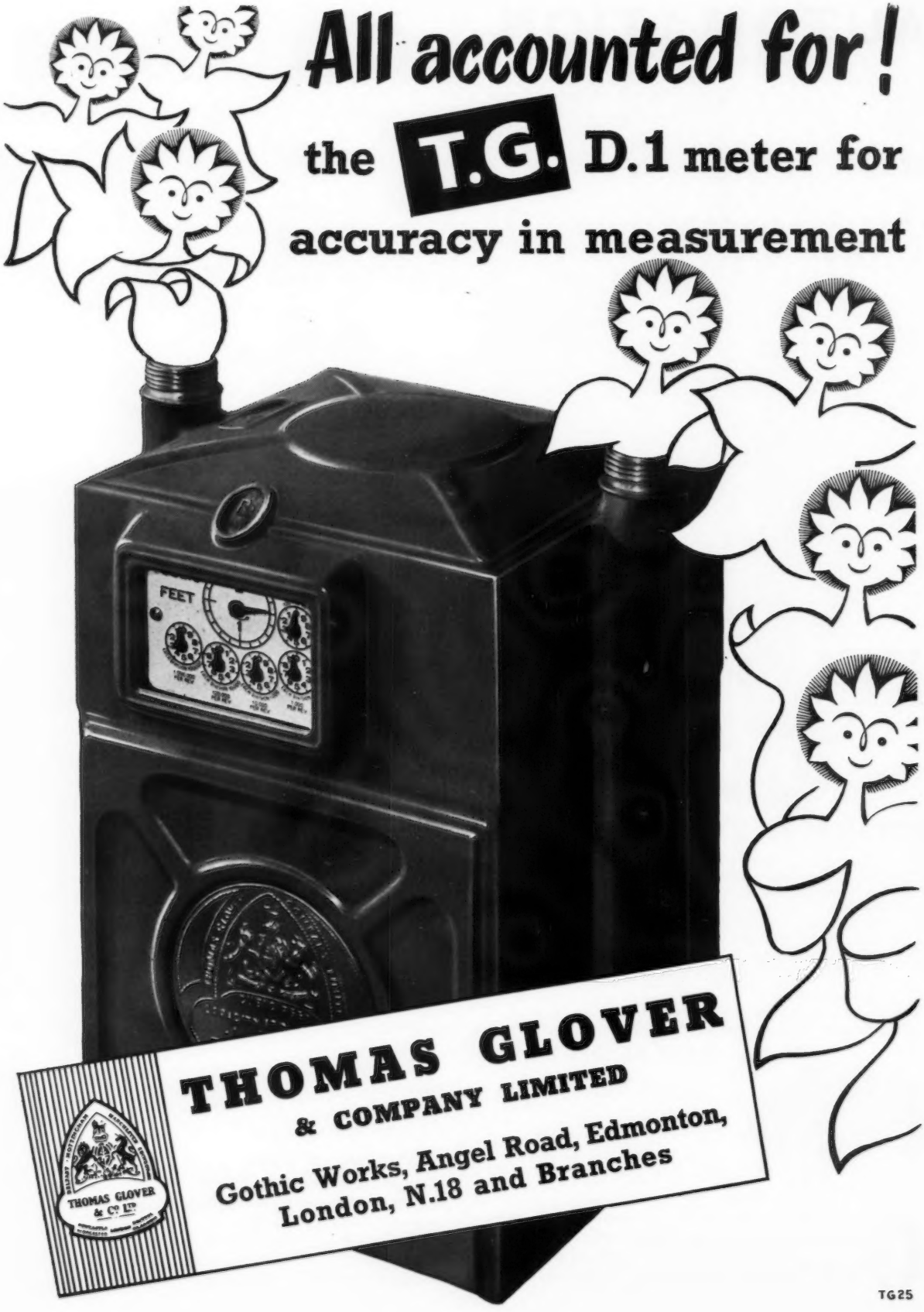

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Gas Journal

VOLUME 285. No. 4831. JANUARY 4, 1956. 108th YEAR

No More G.I. Brides

LIKE the summer moths which fluttered proudly until October was past, the Gas Industry Brides basked in the warmth of their fleeting adulation; only to disappear into obscurity after Mr. Therm's nuptials reached full frenzy on November 1, 1955. However, if the G.I. Brides of the Year are gone and almost forgotten by the public, in the industry itself their memory is still fresh. The tumult and the shouting have died away but the weariness lingers on. It was a gargantuan task to select from the thousands of applicants the 600 who reached the second stage of the competition and from those the hundred odd who got to the area finals; and only further intense selection whittled these down to the 12 finalists from whom was chosen the winner, the photogenic and talented Mrs. Marland. Throughout the operation gas board staffs laboured mightily to huff and puff on the basic idea (which was a good one) and blow it into an inferno of publicity. The publicists, the local sales staffs, and in particular the home service advisers, worked loyally to make the enterprise a success. And a success it was—that is, if you judge it by outward appearances.

All this happened some time ago and it may be asked why the subject should be revived at this late date. There is an excellent reason. Spring is traditionally the season of new growth and announcements of budding ventures, but it is the winter which decides the fate of next season's events. Now is the time to decide 'Shall we do it again?' Suppose we consider some of the relevant facts.

For four years the Gas Council has staged large-scale publicity stunts (for such they are, let us face it) and each has been launched with the majesty and might of the Council's Press and publicity machine, aided and abetted by the area boards. Each time the public has been encouraged to become excited about it and the Press to become sufficiently interested to feature it in their columns. Each time good organization and teamwork have carried the affair to a spectacular conclusion. Festival Fare, International Kitchen, Youth in the Kitchen, and Mr. Therm's Bride of the Year have come and gone. All have been sound enough in that they have embraced ideas likely to have a wide appeal, but there appears to have arisen an odd belief that, having once started the thing, it is necessary to keep it up year after year, the implication being that any break in continuity would amount to an admission of doubt or even of failure. Should we not remember that year by year conditions are changing and that what was good for 1951 is not necessarily good for 1956?

The year 1951 was a remarkable one for, despite all that the critics had to say at the time, it cannot be denied that the Festival of Britain served as a turning point in the nation's affairs. The eyes of the world were focused on British initiative and as was only right and proper the gas industry came up with a super cookery competition—Festival Fare. That competition did us a lot of good because it showed that the gas industry was full of fight and vigour and it enabled the two-year-old Gas Council to show its paces as the organizer of a popular national event. In our view neither the opportunities opened up by that event nor the success it enjoyed have been equalled since.

These Gas Council competitions—and although strictly speaking an exhibition, we include International Kitchen in this category—are losing their freshness. Not only is public interest waning—what is perhaps worse, the gas industry itself is losing interest. It is an open secret that the Bride was greeted with scant enthusiasm by those members of the industry who had to do the work on it, and although these people did not allow personal doubts to affect their efforts to promote the event in their areas, it took a lot of hard work to get the competition going.

Since 1951 the fuel industries have suffered a sea change, particularly in the way in which they are regarded by their consumers. The main reason for this is of course the relentless increase in prices which has made the average consumer look askance at *his* gas industry offering lavish cash prizes in publicity ventures. It is our belief that for this reason the Bride generated as much bad publicity as good but that for the most part it lurked below the surface, erupting only occasionally into the correspondence columns of the daily Press. Another similar competition might well evoke much sharper criticism, and that is something we can ill afford at the present time.

We have raised this matter because some primæval instinct leads us to believe that strange ideas may be hatching in the brain cells of Grosvenor Place. There may be competitions for mothers-in-law, for housemaids, for bonny babies, for two-headed dustmen—the mind

boggles. The ideas may be brilliant but, we respectfully suggest, now is not the time for them. We hesitate to open this first issue of a bright New Year with a cautionary tale, but might not 1956 be the year in which to turn our thoughts from frolics at Festival Hall to door-knocking in Everyman's Avenue? The need to sell our appliances was never greater but with Westminster on the watch and the public on the prowl, surely we must use our resources with discretion and in such a way that the reward is reasonably assured.

The gas industry is at one of the critical stages in its development, one in which there is a seeking out of new processes and new lines of development. It would be appropriate if publicity followed the example set by technology and undertook a similar quest for new horizons. We are wholeheartedly convinced of the important part which publicity must play in the industry's future and of the brilliance of which our publicity men are capable. But since we find it difficult to believe that the funds spent on the Bride and her predecessors—funds which must be calculated in man-hours as much as in pounds and shillings—could not have been more wisely spent, we have grave doubts concerning the continuance of such a policy. In the case of the Bride the publicity scheme was launched from above and the sales staffs were employed to keep it afloat. Might not a more profitable arrangement be the evolution of a hard-selling plan of action for the salesman, and then the creation of a major publicity drive to implement that plan? Selling and publicity should be indivisible, but selling should be the twin which calls the tune.

The New Minister

ONE of the possibilities arising from the Cabinet shuffle is that of an improvement in Press relations where matters of the Ministry of Fuel and Power are concerned. The new Minister, 44-year-old Mr. Aubrey Jones, has a background which suggests that he might know far more about the importance of this aspect of his department's work than his predecessor—who was inclined to be a little reticent. A brief resumé of Mr. Jones' career will serve to show that there is every reason to believe that he ought at least to have a broad outlook. The new Minister, who is Conservative M.P. for the Hall Green Division of Birmingham, is the son of a miner. He was educated, as we intimated last week, at the London School of Economics, where he gained his B.SC.(ECON.) with first-class honours and where he was the Prizewinner and Gerstenberg Post-graduate Scholar. He worked on the foreign and editorial staffs of *The Times* from 1937 until he joined the Army in 1939. He was again with *The Times* from 1947 to 1948. In 1952 Mr. Jones was appointed to the former post of Parliamentary Private Secretary to the Minister of State for Economic Affairs. He was appointed General Director of the British Iron and Steel Federation last September.

In view of his somewhat surprising interlude as a Pressman he will undoubtedly appreciate the value of keeping the Ministry's activities before the public. Mr. Shinwell and Mr. Gaitskell, in their terms of office, both held Press conferences at frequent intervals, and the result was a general feeling among editors that however good or bad a policy was the Minister concerned was going to stand by it before the public. May we put in a plea now for a resumption of those conferences?

Help for Agriculture

THE nationalised gas industry now provides about 12% of the total deliveries of sulphate of ammonia for agricultural consumption in the United Kingdom, the balance coming from coke ovens, iron, steel, and chemical works, in addition to which several million gallons of ammoniacal liquor are supplied for direct application to the land. The sixth annual report of the Gas Council records that sales of fertilizers in both crystal and liquid form showed an advance last year. Sulphate of ammonia sold rose from 82,700 to 84,000 tons, and appreciably greater quantities of ammoniacal liquor were sold. The Southern Gas Board, for instance, increased its sales of liquor from rather less than 1½ mill. gal. to over 2 mill. gal., and the South Western Gas Board provided more than 3 mill. gal. for agricultural use. Reports of satisfactory results from spraying with ammoniacal liquor continue to be received from many parts of the country, and particularly from Lincolnshire, where the liquor has now been applied to the land for seven years. The Edinburgh and East of Scotland College of Agriculture continued experimental applications of the liquor as a direct fertilizer, employing a slightly modified technique. The liquor is eligible for subsidy, payable to the occupier of the land.

The annual report of the British Sulphate of Ammonia Federation, which we summarize on another page, confirms the upward trend in production of fixed nitrogen for all purposes. Estimated world production in the 12 months to last June increased by 14% compared with the previous year; total consumption rose by 13%, and the percentage increases for agricultural and industrial use were about equal. As world consumption fell short of production there was a further increase in working stocks. Deliveries of sulphate of ammonia for agricultural consumption in the United Kingdom at 737,301 tons were the highest since 1949-1950, but fell short of that year's record of 748,115 tons.

The subsidy on sulphate of ammonia paid to farmers was increased from £3 3s. to £3 12s. per ton from July 1, 1954, and this partially offset the price increase of 18s. 6d. per ton, but neither factor appeared to have an important effect on sales. The Federation report, covering the 58th year of propaganda undertaken successively by the Sulphate of Ammonia Committee, the Association, the Federation, Nitram, Ltd., and Imperial Chemical Industries, Ltd., reviews the propaganda carried out during the year and mentions that every advertisement made reference at some point in the text to the use of sulphate of ammonia. With regard to exports, the report states that total shipments were 308,678 tons, compared with 299,000 tons in the previous year.

Seven of the area boards are represented on the Council and various committees of the Federation, and Mr. Michael Milne-Watson, Chairman of the North

Thames Gas Board, continues to share the duties of Vice-Chairman with Mr. Lawrence Weaver. The Federation now has a membership of 72, a reduction of three compared with the previous year, due to amalgamation within the industry.

A DECADE OF RESEARCH

A REPORT on atmospheric pollution investigations carried out during the past ten years by the Fuel Research Station of the Department of Scientific and Industrial Research reveals nothing that is not known already. But there is always something to be learned from a study of this nature, especially when data from such a long period of time is compressed into a single volume. One of the conclusions drawn from the report is that during the last 15 years there has been a general increase in the pollution of the atmosphere in Great Britain by grit and dust, and small decreases in pollution by smoke and oxides of sulphur. Summarized are the results of 1½ mill. individual measurements taken on specified instruments. These measurements were made by local authorities and other organizations who co-operate with the Fuel Research Station of the Department in a study of air pollution in many parts of the country. During the ten years 1944-54 the number of co-operating organizations increased from 80 to 220, and the number of measuring instruments in regular use by them rose from about 200 to 1,500, and the number has since grown to about 2,000.

Some idea of the importance of the Station's work on the abatement of pollution is given in an objective chapter concerning applied fuel efficiency. The Report points out, for example, that in 1947, as a result of the Simon Committee recommendations, an official system was set up for the testing of solid fuel burning appliances for space heating, water heating, and cooking. Appliances which satisfy the test requirements are placed on a list of 'recommended appliances' from which local authorities are required to make selections for installation in subsidized housing estates. Again, one of the first programmes of the Fuel Research Station was 'an investigation of the practical problems which must be solved if any large proportion of the raw coal at present burned in its natural state is to be replaced by the various forms of fuel obtainable by carbonization and gasification processes.'

The full title of the publication is *The Investigation of Atmospheric Pollution*, and it is published by H.M.S.O. for the D.S.I.R. at 7s. 6d. (postage 4d.). Nowhere in the book does the Department make any particular claim for the work of the Research Station; the magnitude of its labours over the past ten years can be assumed from its pages, and the immensity of its task in the future can be guessed.

ESSEX STREET CHAMPAGNE

WHEN a younger sister reaches her 100th birthday one naturally begins to feel rather old; in spite of this, however, we offer our sincere and hearty congratulations to the *Engineer* on this its Centenary day. To celebrate, a very fine bottle of Essex Street champagne has been served in the form of a Centenary Number, the preparation of which, in the words of the Chairman of the publishers, Mr. O. Chadwyck-Healey, has involved 'these several years past.' As far as the production of this Number is concerned, it can fairly be called a classic if only for the superb colour review entitled 'modern products,' which includes illustrations of such present-day scenes as the Calder Hall nuclear power station and a modern living room. The latter is to emphasize that, 'The underlying purpose of (the engineers') work is to improve what are expressed as "living standards".'

To name any of the 26 contributors would be doing an injustice to the remainder. Suffice it to say that the very essence of present-day engineering, scientific and administrative brains is represented; and each of this distinguished gathering writes with the flourish and at the same time the objectivity appropriate to such an occasion. The past 100 years has seen many advances in engineering endeavour and it has been a task of magnitude to report upon and further the interests of those industries which were only in their formative years. The *Engineer* seized from the first its admirable opportunities and its outlook, as the Centenary Number shows, has remained as broad as its scope.

ADVISED ECONOMY

IT has been estimated that in certain circumstances an unskilled fireman can, in a single day's working, cause a waste of more coal than a miner can produce in that time. Indeed, an untrained man can waste up to 30% of the total fuel consumed. The necessity to employ trained firemen is emphasized in a booklet, *Fuel Conservation and Productivity*, published recently by the British Productivity Council. Coal is still the only large source of energy available to us in this country, and we shall have to continue relying on it as the main home source for at least the next 20 years—that is until others, such as atomic power, can be sufficiently developed. Other fuels, especially oil, have in the main to be imported. Industrial production has risen 29% since 1948, while coal output has risen only 7%, and there is growing anxiety lest shortage of fuel should become a barrier to economic progress. It is with this anxiety in mind that the Council has prepared the booklet. To augment the small rise in coal production we have this year, for the first time in our history, imported more coal than we have exported—at a cost of £80 mill. in foreign exchange. If all users of coal could make only a 10% reduction in their consumption, at least 2 mill. tons would be saved in a year. This would mean £14 mill. in our balance of payments. The booklet points to a number of reasons for high coal consumption where, by means of more skill and better management, this 10% saving could easily be effected. But the Council has concentrated only on advising in the cases of conversion of coal energy into steam energy, conversion of steam energy into power, and in high-temperature applications other than steam. Regarding the latter case, the booklet states: 'Much avoidable waste occurs in the operation of many furnaces and other high-temperature equipment, such as kilns and drying ovens, which use fuel either in the form of raw coal or its derivatives such as gas and electricity or of oil.' And that is the only mention of gas.

If the British Productivity Council, the Ministry of Fuel and Power, and the National Industrial Fuel Efficiency Service are so eager to achieve a 10% reduction in coal consumption, they should realize more fully the potentialities of gas. N.I.F.E.S. administers a loan scheme for altering plant to give a better fuel economy. If all the loans could be applied solely for changing over from coal burning to gas or oil consuming plant, more coal could be diverted to the gas industry. There, it is certain to be transformed into energy by recognized experts, rather than wasted in the smaller industries by unskilled operators. The management of these smaller industries would soon learn that by the cleaner, easier, and more accurate control afforded by gas and oil, they would be saving money. And the nation would soon achieve and pass its 10% economy target that is now causing so much consternation.

Personal Notes

NEW YEAR HONOURS

In the New Year Honours List, published on Monday, is the announcement of the conferring of a Baronetcy on SIR HUBERT S. HOULDSWORTH, Q.C., Chairman of the National Coal Board.

MR. H. F. H. JONES, C.B.E., Deputy Chairman of the Gas Council, receives a Knighthood.

SIR HUGH E. C. BEAVER receives the K.B.E. for public services and services to industry.

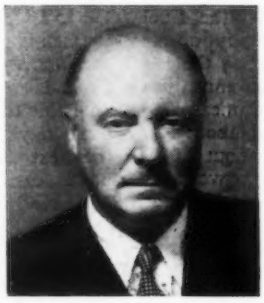
MR. F. GREENWELL, Secretary of the British Coking Industry Association, and MR. R. S. SNELLING, Deputy Chairman of the Wales Gas Board, are both recipients of the O.B.E.

MR. G. H. PALMER, Deputy Secretary and Accountant, South Western Gas Board, and MR. J. HUNTER-RIOCH, General Manager, Cambridge Division of the Eastern Gas Board, both receive the M.B.E.

The British Empire Medal (Civil Division) has been awarded to seven members of the gas industry. They are: MR. A. AINSWORTH (Storekeeper, Morley District, North Eastern Gas Board); MR. W. ALLISON (Foreman Gasfitter, Ayr District, Scottish Gas Board); MR. G. BENNETT, Motor Driver, North Thames Gas Board); MR. F. BONE (Yard Foreman, Crewe Works, North Western Gas Board); MR. R. R. GOATHAM (Works Foreman, Gillingham Works, South Eastern Gas Board); MR. J. LUCAS (Engineer and Manager, Llanberis Gas and Water Undertaking, Wales Gas Board); and MR. A. R. WARREN (Assistant Works Engineer, Lincoln Undertaking, East Midlands Gas Board).

MR. J. S. JEFFREY has been appointed Chairman of W. J. Jenkins & Co. Ltd., following the vacancy caused by the death announced last week of Mr. R. M. Goodman. Mr. Jeffrey joined the Board of Directors as Deputy Chairman in September, 1954. He has had a long and successful career in the contracting side of the gas industry. Educated at Dulwich College, he served his engineering apprenticeship with the firm of Edward Cockey, Ltd., of Frome, and joined the Woodall-Duckham Construction Co., Ltd., in 1912, becoming Sales Director in 1925, and Joint Managing Director in 1948, until his retirement in 1954. In addition to the Chairmanship of W. J. Jenkins, Mr. Jeffrey is also a member of the boards of directors of Woodall-Duckham, Ltd., of International Furnace Equipment, of Aldridge, Staffs., and is Chairman of Nederlandsche Ovenbouw Maatschappij, Zeist, Holland (a company serving the gas industry in Holland). His lifelong experience of engineering and in particular of the gas industries of many countries in the world with which he has personal contacts, will add material benefit to the control and operation of W. J. Jenkins & Co., Ltd.

MR. H. M. LAWRENCE, who as briefly announced last week has been promoted to Co-ordinating Engineer, Eastern Groups (Portsmouth, Southampton and



the Isle of Wight) of the Southern Gas Board, joined the former Gas Light and Coke Company at Beckton in 1925. After going through all departments of the works, spending a year in Germany, and visiting America in connection with coke oven plants, he became the first Engineer in charge of the new coke oven plant at Beckton in 1931. He was appointed Assistant Coke Manager in 1933 and Transport Manager in 1934. He was a member of the Research Committee of the Institution of Automobile Engineers and an original member of Sir Harold Hartley's Producer Gas Committee on Alternative Fuels for Motor Vehicles and in the course of these duties paid visits to Germany, France, Denmark and the United States. He was also a member of the Regional Road Transport Advisory Committee for London and the Home Counties Region (Ministry of Transport). He went to France with the Royal Engineers in the winter of 1939-40 on the construction of airfields and advanced landing grounds, was wounded and mentioned in despatches. After the evacuation he was posted to Headquarters, Southern Command, in charge of all transport, excavating plant and mechanical equipment for the Chief Engineer). This involved the transporting of materials and equipment by rail, coaster, canal and road. Mr. Lawrence was concerned with aerodrome construction, particularly with the American Air Force; the construction of the Mulberry Harbour 'Pluto'; and the special emergency service for the repair of bomb damage. On demobilization in 1945, as a Lieut.-Colonel, he returned to the Gas Light and Coke Company as Transport Manager. In 1950 he received an award of £1,000 from the Royal Commission for Investments concerning the handling of cement in bulk on war projects. Just prior to nationalisation he joined the Portsmouth and Gosport Gas Company as Assistant General Manager, becoming, on vesting day, General Manager of the Portsmouth, Gosport and Bognor Regis Gas Undertaking.

Calendar & Directory Alterations

The following changes have been notified during the past month. To keep the information in the current 1956 edition of the Gas Journal Calendar and Directory up to date readers are invited to note these alterations in the Directory Section.

Page D51.—GOOLE: Delete A. F. Yates, *E. & M.*, deceased.

Page D55.—NORTH THAMES GAS BOARD: L. W. Smith, *Chief Accountant* vice O. W. Wells, retired.

Page D97.—WALES GAS BOARD: T. L. Davies, B.A., *Industrial Relations Officer;* R. Jones, A.M.INST.GAS E., *Grid Manager;* F. Richmond, A.M.INST.GAS E., *Mechanical Engineer.*

Page D100.—HOLYWELL AND FLINT: C. W. Butler, *E. & M.*

Page D101.—BRIDGEND: S. G. Meade, *E. & M.*, vice W. E. Whitney.

Page D102.—NEWPORT GROUP: A. H. Dyer, M.INST.GAS E., *Chairman and Convenor,* Newport Gas Undertaking, Mill Street, Newport, Mon., T/N. 62055.

Page D107.—WEST MIDLANDS GAS BOARD: Delete W. H. Malcolm, *Member,* deceased.

Diary

January 6.—LONDON AND SOUTHERN JUNIORS: 'Next Slide, Please!'—an aid to the presentation of technical papers, R. N. Le Fevre, 178-180, Edgware Road, London, W.2. 6.30 p.m.

January 7.—SCOTTISH JUNIORS (EASTERN): Short Paper day. Dundee.

January 9.—INSTITUTE OF FUEL, NORTH EASTERN SECTION: Four short papers: Case Histories, by the National Industrial Fuel Efficiency Service, Chemistry Lecture Theatre, King's College, Newcastle - upon - Tyne. 6.30 p.m.

January 10. — MIDLAND JUNIORS: 'Distribution of Gas in Birmingham,' R. W. Nelson.

January 11.—SOUTH WESTERN I.G.E.: 'Coal and its Treatment,' Dr. Idris Jones, C.B.E. Demonstration Theatre, Radiant House, Bristol. 2.15 p.m.

January 12.—SOCIETY OF INSTRUMENT TECHNOLOGY: 'Liquid Flow Control,' B. W. Balls. Manson House, Portland Place, London, W.1. 7 p.m.

January 13.—SCOTTISH JUNIORS (WESTERN): Short paper evening. Papers by C. M. Miller and R. Taylor. Gas Showrooms, 522, Sauchiehall Street, Glasgow, C.2. 6 p.m.

January 14. — YORKSHIRE JUNIORS: Short Paper Day. 'Some Advantages of Training on a Small Gasworks,' P. R. R. Stead; 'Pipe Bridges,' D. Craven; 'Air to Purifiers by Injector,' C. Stanton. York.

January 16.—EASTERN G.C.C.: Connaught Rooms, London, W.C.2. 2 p.m.

W.M. PLAN OPPOSED

Local Council Maintain New Coleshill Plant Unfair to Ratepayers

The West Midlands Gas Board's plan to build a gas-making plant on land fronting Lichfield Road, and Gorsey Lane, Coleshill, is being opposed by Meriden Rural District Council. Mr. G. le B. Diamond, Chairman of the West Midlands Gas Board, states that the plan was first mentioned in 1951 or 1952 and the cost of the proposed plant might run to £4,500,000, although this was a 'very tentative' figure.

The works would cover between 12 and 15 acres and supply a great deal of gas for the West Midlands grid. Gas holders would not be built at Coleshill because these are being built in other areas. The Board had had immense difficulty in finding a suitable site, Mr. Diamond said, and the one at Coleshill was considered ideal. It was conveniently located to the East Midlands coalfield which produced the most suitable coal for this type of gas-making, was adjacent to railway facilities, had an ample water supply and facilities for disposing of effluent were available.

The site, part of which is already owned by the Board, also had secure foundations for heavy equipment. This requirement was lacking at many sites in the Black Country, where mining in the past has led to the danger of subsidence. A system for the complete gasification of coal would be employed at Coleshill, which would mean that there would be no dust, Mr. Diamond added.

Councillor F. S. Butler, Chairman of the Meriden Rural District Council, said on December 17 that the area was a rural zone and part of the green belt. Residents already had to contend with the dust and other nuisance from Hams Hall, where a third power station was being built and the new plan was 'carrying the thing a bit too far.' The Council felt that the gas-making plant could be sited somewhere else among heavy industry, and it would not be fair to the ratepayers to agree to the Gas Board's proposal.

Eton Rural District Council have been informed by the North Thames Gas Board that it would be impracticable to change the site of the proposed new gas holder at Taplow, Bucks.

Meter readers and collectors due to have been sacked on New Year's Day by the Glasgow office of the Scottish Gas Board have been granted a reprieve —but only a temporary one. Final notices have not yet been served on the men, and it is likely that their services will be retained until at least the end of January.

Gas and Electricity Battle

The battle between two State-owned industries—gas and electricity—for consumers has developed at Bentley, near Doncaster, into a situation where 50 new council houses, besides having electric power points in every room, will also have five gas points. Many of the gas points provide the same kind of service. Beside the gas cooker will be an electric point to take an electric cooker, and as well as wiring for an immersion heater there will be a point for a gas sink-water heater.

When the urban council agreed to accept an offer from the East Midlands Gas Board of free installation of service pipes which would have cost the council £495, it undertook in return to install the five gas points as a minimum. The additional cost to the council for the extra points is £105, a saving of £390. Already the council is under an obligation to the Yorkshire Electricity Board for a minimum installation of power and light points in return for the laying of mains services. Although it is installing gas cookers in all its houses it has had to agree to a control point for an electric cooker being fitted near each gas oven.

An East Midlands Gas Board spokesman has denied that there was any element of 'cut-throat competition' with the Electricity Board leading to alternative services which council tenants really did not need, and to unnecessary capital outlay. He said, 'We are making an offer throughout our area to install up to 60 ft. of service piping where there is a minimum of five points. If we can spread capital costs over more houses we can sell more gas and keep prices down.

Ex-Bevin Boy is Winner of Milne-Watson Scholarship

This year's award by North Thames Gas Board of the Milne-Watson Scholarship has gone to 28-year old Mr. Robin Robson, a laboratory assistant at the Fulham Research Laboratory. The Scholarship was founded in 1946 in memory of Sir David Milne-Watson, Governor of the former Gas Light and Coke Company, and is awarded annually to the most deserving part-time student under the Board's education scheme. It entitles the holder to leave of absence with pay to enable him to devote his full time to study at a college, technical institute or university. The accompanying grant covers maintenance fees and out-of-pocket expenses.

Mr. Robson has started a full-time course at the Battersea Polytechnic, studying for the degree of B.Sc. (Chemical Engineering), having already passed Part I of the examinations for it. One of the first 'Bevin boys,' he was called up for work in the mines in 1945. He spent twenty months working underground before being transferred to work in the N.C.B.'s laboratories. Mr. Robson joined the staff of North Thames Gas Board three years ago.

ELECTRIC BLANKET FOR GAS ENGINEER

Awards at Walsall

Walsall George Medallist, Mr. Richard N. Hateley, was presented with an electric blanket at the Masonic Hall, Walsall on December 12 on the occasion of his departure from the Pleck gasworks. Mr. Hateley has been appointed to Nechells gasworks in Birmingham, where he will take up the post of Assistant Engineer. Fifty-years old Mr. Hateley, had been employed at the gasworks for the past 37 years. He started as a laboratory assistant. Later he became Chief Chemist at the works, and in 1937 was promoted to Works Superintendent, which post he held until his recent appointment at Nechells.

Other awards presented were one to Mr. D. Nightingale, from the Walsall Civil Defence Corps which made him a qualified Civil Defence Instructor and he will now have the job of teaching Civil Defence to the employees at the gasworks. The following received long-service certificates for 25 years' service with the gas concern: Messrs. A. Ballinger; W. Cresswell; F. Gwilliam; J. L. Jones; E. W. Jones; E. B. Lamb; G. H. Nightingale; A. A. Smith; F. J. Smith and J. Gavan.

Safe driving awards were also presented and the nine people receiving them had driven a total of 160,000 miles without an accident. Mr. S. H. Lawrence, Engineer and Manager of the Pleck gasworks made the presentations.

INTERNATIONAL INCIDENT

Following on the 'International Kitchen' Exhibit sponsored by the Gas Council at the British Food Fair in 1954, the representatives from about twenty countries who took part decided to continue with the friendships they had made and they now meet regularly every month at each other's homes for dinner, bringing with them a dish characteristic of their country. December was the turn of Great Britain with Dame Vera Laughton Mathews as hostess. Her contribution was a typical British Christmas party, with turkey, pudding, crackers and a tree with presents. It was a special meeting, too, for the guests of honour were Mrs. C. Dietemeyer and her husband (Mr. and Mrs. America). Left, Miss Matrona Xylas of Greece hands her dish of Greek Christmas biscuits to Mrs. Dietemeyer (Mrs. America). Right. From left to right are Mrs. Pereira (Portugal), Mrs. Pesik (Indonesia), Mrs. Margalit (Israel), Miss Audrey Matlack (America), Mrs. Chan Stirling (China), Mrs. Hsu (China), behind Mrs. Rodgers (Denmark), Mrs. Calderoni (Italy), Dame Vera Laughton Mathews, Begum Ahmed Ali Khan (Pakistan), and Miss Maywen Godby (G.B.).

GAS-CRAFTS EXHIBITED AT EDINBURGH

The forty gasfitting apprentices of the Edinburgh Division of the Scottish Gas Board demonstrated the skill and knowledge they have already gained in the first-ever craft exhibition and open night at the Board's Social Club in Albany St., Edinburgh, on December 22. Examples of pipe-bending and jointing and installations for space heating, water heating, and many other appliances were on view. The exhibition, which was attended by parents and friends, covered the five years of an apprentice's work.

Divisional Controller Mr. D. Beavis presided and certificates were presented to the successful apprentices by Mr. R. Bone, Sales Manager for Scotland. Mr. J. A. Dow, the city organizer for further education, and Dr. E. A. Thomas, Ministry of Education Inspector on technical subjects, were also present. Apprentices who received the City & Guilds of London Institute certificates were: Intermediate.—Messrs. T. McLaren, T. Dickson, R. Heigh, R. Nisbet, D. Morris, D. Crawford, J. Duffy, D. Graham; Final.—A. J. Wilson; Full technological certificate.—Messrs. J. Dunn, I. Kidd, and D. Conway.

Sales of gas and coke appliances by the North Western Gas Board in November amounted to £264,840. The capital value of appliances newly let out by the Board on simple hire was £180,225, bringing the combined turnover to £445,065, a decline of 2% below the figure for November, 1954, when few appliances were available on simple hire terms. The new trend into hiring was stimulated by the restrictions on hire-purchase transactions since early this year. The simple hire scheme has now been discontinued. Appliances sold and hired in the first eight months of the Board's current accounting year (April-November, 1955) were valued at £3,212,090 compared with sales of £3,229,445 in the same period of 1954.

EPIDEMIC OF METER THEFTS

Gas meter thieves are so numerous in Greenock that the Scottish Gas Board and local police are advising tenants not to use pre-payment meters. At a meeting of the Corporation it was stated that Greenock had more meter thieves than any other town in Scotland. The thefts were becoming an epidemic. The total of meters broken into over the past five years was 2,117.

It was decided to adopt the Chief Constable's recommendations and instruct the gas and electricity boards not to install prepayment meters in Corporation houses or as replacements to older houses unless specially requested by householders.

The Corporation Factor is also to give the Chief Constable the names and addresses of persons allocated houses so that he can advise them to install credit meters.

Repairs at Oban Works

During the course of major repairs at present being carried out at Oban gasworks, one of the gasholders has been emptied for the first time since it was brought into use. This is the larger of the two holders used at the gasworks which is at present undergoing re-sheeting in parts because of deterioration in the metal. The work is being carried out by the original contractors, Robert Dempster & Sons Ltd., of Elland, Yorks, who are also availing themselves of local labour and the men are at present working the tank which has a capacity of 50,000 cu.ft. The plates are being prefabricated at the contractors' premises and then sent to Oban for fitting into position. These repairs are expected to take another five or six weeks before completion.

In the meantime the local gas authorities are having to continue on only one holder, the smaller of the two, which means they are finding it a little difficult to keep the pressure up in the town. With no reserve supplies, they are very busy during the day and slack at night in order to allow supplies to come up to pressure again for the next morning at six. Other repairs are going on in connection with the extension of the purification plant which involves the resetting of a bed of retorts. This job is being done by direct labour and is normally carried out every six or seven years whenever a bed has reached the end of its useful life, and the work should result in very much improved gas facilities from the beginning of next summer.

The exterior of this streamlined job is a good advertisement for gas, apart from the well-designed interior. The Sheffield and Rotherham Division put it into commission on December 12 last.

SPANKING NEW (20 M.P.H.) SHOWROOMS

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Mobile Units at Sheffield and Rotherham and Lanarkshire

THE New Year will see an increasing use of the mobile showroom. Both the Scottish Gas Board, Lanarkshire Division, and the East Midlands Gas Board, Sheffield and Rotherham Division, have recently introduced literally shining examples of this popular media.

About results, already the Scottish Gas Board reports that 'In addition to the direct sales effected, the showroom has stimulated business in local showrooms.'

Calor Gas

Next to the driver's cabin of the Lanarkshire showroom is a small office section. Calor gas cylinders and overhead water tank for operation of water heaters are installed in a cupboard behind the driver's seat. There are four interior roof lights.

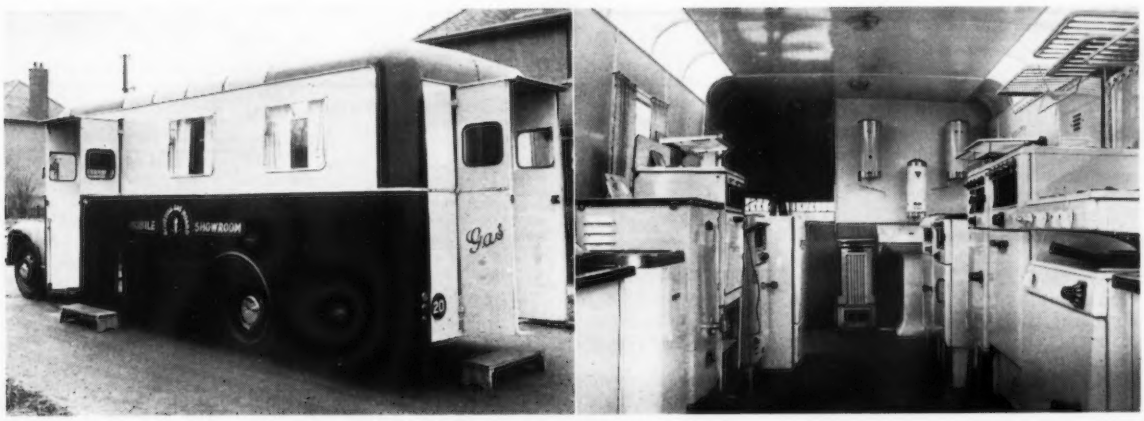
The Sheffield and Rotherham Division unit went into commission on December 12 last. Despite the fact that weather conditions were extremely bad for the first three days of its tour of duty in Sheffield, the unit attracted considerable attention and a large number of sales and enquiries resulted.

One of the attractions was that the unit was equipped with towns gas and it was possible to display 'live' gas fires while the temperature was in the region of 25°F.

The display unit is carcassed throughout to connect up to a portable high pressure mobile gas unit which is part of the equipment provided with the vehicle. It is possible to display at any time twelve appliances all 'live' together with two water heaters fitted over a water heating display unit. Internal lighting is by the Martindale System and provision is made for floodlighting the vehicle if necessary during hours of darkness. It is also equipped with V.H.F. radio and a public address system.

The unit will carry out a programmed tour of duty at all areas in the Division and it is anticipated that it will be employed for some 250 days of the year. Accounts of all types can be paid at the unit.

The interior of the Sheffield and Rotherham showroom.



These two pictures are of the smart mobile showroom at Lanarkshire. There are four interior roof lights, separately controlled, run from a 12-volt battery and the office section can be seen adjacent to the driver's cabin.

SULPHATE OF AMMONIA
and Agricultural Development

THE 35th annual report of the British Sulphate of Ammonia Federation, reviewing the 58th year of propaganda undertaken successively by the Sulphate of Ammonia Committee, the Association, the Federation, Nitram, Ltd., and Imperial Chemical Industries, Ltd., records advances in the use of sulphate of ammonia in British agriculture. Total deliveries by the Federation in home and export markets showed a further rise from 1,047,000 tons to 1,049,400 tons.

The figures in Table I, expressed in thousands of metric tons of pure nitrogen for 'Fertilizer Years' ended June 30, have been compiled from the published information available regarding production and consumption of nitrogen.

TABLE I.—WORLD PRODUCTION AND CONSUMPTION OF FIXED NITROGEN FOR ALL PURPOSES
Thousands of metric tons: 1 metric ton = 0.9842 long ton

	1954/55		1953/54		1952/53	
	Production	Consumption	Production	Consumption	Production	Consumption
EUROPE (*a*)	4,226.5	3,598.0	3,739.0	3,237.4	3,279.5	2,806.0
Belgium/Luxemburg	246.9	98.6	215.3	106.8	181.7	93.6
France	405.1	408.9	329.3	343.1	311.9	305.1
Germany—Western	890.6	548.2	763.5	525.3	718.6	490.9
Netherlands	295.6	190.1	262.9	173.5	247.4	161.2
Norway	203.8	44.1	192.6	37.3	170.3	40.3
Italy	371.0	266.0	316.6	241.0	247.3	205.4
U.K.	449.1	365.8	451.3	344.7	431.7	310.9
Other Europe (a)	1,364.4	1,676.3	1,207.5	1,465.7	970.6	1,198.6
ASIA (*b*)	832.0	1,185.8	752.9	1,009.5	671.0	964.8
China and Formosa	45.0	240.8	34.1	156.3	31.3	152.0
India	79.8	112.1	67.2	100.5	65.1	102.5
Pakistan	—	15.7	—	15.2	—	6.4
Ceylon	—	22.0	—	17.4	—	15.1
Japan	696.3	579.0	644.6	529.1	572.0	505.9
Other Asia (b)	10.9	216.2	7.0	191.0	2.6	182.9
AFRICA	64.3	222.1	44.4	191.3	37.3	170.6
Egypt	27.1	113.1	20.1	111.9	18.7	107.3
Other Africa	37.2	109.0	24.3	79.4	18.6	63.3
OCEANIA	20.8	35.0	19.6	33.3	18.0	22.3
AMERICA	2,804.2	2,749.6	2,407.8	2,413.9	2,180.7	2,089.0
U.S.A. (*c*)	2,326.0	2,491.4	1,971.2	2,207.0	1,720.8	1,924.4
Canada	210.0	84.7	191.1	75.0	193.2	63.6
Chile	251.1	11.3	230.1	10.3	252.7	10.9
British West Indies	—	8.5	—	8.9	—	8.7
Other America	17.1	153.7	15.4	112.7	14.0	81.4
TOTAL WORLD	7,947.8	7,790.5	6,963.7	6,885.4	6,186.5	6,052.7

(*a*) Including Eastern Germany and U.S.S.R. (*b*) Including North Korea. (*c*) Including Hawaii and Puerto Rico.

Total production increased by 14% compared with the previous year; total consumption rose by 13% and the percentage increases for agricultural and industrial use were about equal. The total United Kingdom production of nitrogen products in the calendar year 1954 was 0.9% higher than in 1953. Output of fertilizer products decreased by 1.3% but production for industrial uses increased by 6%.

The quantities in the first five tonnage columns of Table II show the total production of nitrogen products expressed in terms of a standard material containing 25% ammonia = 20.6% nitrogen. The last column shows tons of sulphate of ammonia actually produced with a nitrogen content varying from 20.4% to 21.1% N.

TABLE II.—TOTAL PRODUCTION OF NITROGEN PRODUCTS AND SULPHATE OF AMMONIA IN UNITED KINGDOM
(Long tons of 2,240 lb.)

Calendar year	England and Wales	Scotland	Northern Ireland	Total	Included in the Total	
					Industrial Ammonia Products	Sulphate of Ammonia as such
1939	783,400	72,400	1,000	856,800	263,900	483,300
1951	1,679,800	224,800	1,700	1,906,300	601,500	968,100
1952	1,787,200	223,800	1,500	2,012,500	556,600	1,015,400
1953	1,887,100	242,400	1,400	2,130,900	622,900	1,047,000
1954	1,906,900	241,300	1,100	2,149,300	660,500	1,049,400

Table III is based on nitrogen producers' deliveries against sales within the fertilizer year and for 1954-55 shows an increase of 6,636 tons or 2.7% over 1953-54, the highest figure previously recorded. Consumption is estimated to have been approximately equal to the tonnage delivered. The proportion of nitrogen sold in the form of compound fertilizer was again higher than the proportion sold for direct application as such.

The extensive mechanization of British agriculture enabled most of the arrears of autumn cultivations caused by bad weather to be overtaken, and the summer of 1955 was fine and sunny. Fertilizer sales responded quickly to the changed conditions and exceptional deliveries in March-June, 1955, not only wiped out the deficit in total nitrogen sales (compared with the same period of 1953-54) but enabled new records to be established. Excellent hay crops were taken and cereals responded well to late top dressings of nitrogen. The results achieved in 1954-55 confirmed the soundness of the development work on grassland and cereals which I.C.I. has been pursuing for a number of years. This work is being extended and intensified in collaboration with progressive farmers and with the full support of official advisory bodies.

Throughout the year strong emphasis was laid in the national farming Press on the use of nitrogen for both grassland and cereals. Every advertisement made reference at some point in the text to the use of sulphate of ammonia. Booklets and leaflets were issued to farmers and to the trade, as in previous seasons. A film, 'Management for Milk,' was widely shown throughout the country to

(*Continued on opposite page*)

TABLE III.—TOTAL DELIVERIES FOR AGRICULTURAL CONSUMPTION IN THE UNITED KINGDOM

Fertiliser Year	Sulphate of Ammonia Only (Long tons of 2,240 lb.)				All Nitrogen Fertilisers (Metric tons of 2,204.6 lb.) Nitrogen Content In		
	England, Wales and Channel Islands	Scotland	Northern Ireland	Total	Sulphate of Ammonia 21% N.	Other Forms	Total Nitrogen
1923/24	79,600	41,000	7,400	128,000	27,300	7,600	34,900
1930/31	97,100	39,000	6,300	142,400	30,400	10,400	40,800
1938/39	134,300	38,800	6,700	179,800	38,400	23,000	61,400
1947/48	483,863	109,953	39,100	632,916	135,047	52,943	187,990
1948/49	449,988	105,275	38,516	593,779	126,696	60,828	187,524
1949/50	564,372	136,015	47,728	748,115	159,627	69,083	228,710
1950/51	540,290	125,161	39,499	704,950	150,417	68,384	218,801
1951/52	415,947	103,455	28,205	547,607	116,844	67,382	184,226
1952/53	505,865	102,843	41,449	650,157	138,726	95,098	233,824
1953/54	560,131	113,309	43,993	717,433	153,081	92,397	245,478
1954/55	583,953	123,763	29,585	737,301	157,320	94,794	252,114

As the bulk of the sulphate of ammonia now used in the United Kingdom contains 21% nitrogen, this percentage has been taken as the conversion factor in col. 6 of the Table instead of 20.6% used in previous reports.

MINERS' 'BULL' WEEK OUTPUT UP ON 1954

During Christmas 'Bull' week output of deep-mined coal was just greater than in the Christmas 'bull' week of 1954, despite the fact that there are now 4,900 fewer men in the industry, and despite the heavy loss of production (about 60,000 tons) in Northumberland and Durham due to the failure of the British Electricity supply caused by the failure at the Stella South power station. Total coal output, at 4,936,100 tons, was 38,000 tons more than in the 1954 'bull' week.

The East Midlands Division, for the second successive week, achieved more than 1 mill. tons, and the week's output (1,049,000 tons) was the highest ever produced by any Division since nationalisation. This Division has so far this year produced 400,000 tons more than in the comparable period of last year. North Eastern Division almost equalled this output, attaining 1,045,000 tons.

Midland Juniors Meet Engineers' Society

The joint meeting of the Midland Junior Gas Association and the Wolverhampton and District Engineering Society, of which Mr. H. J. Reynolds is President, this year aroused considerable interest in both organizations and provided a most successful gathering at Wolverhampton where it was held on December 12.

Mr. Reynolds who has resumed the secretaryship of the Midland Juniors, having been President last year, and is now President of the Wolverhampton and District Engineering Society, occupied the chair at the outset and offered a cordial welcome to the members of both organizations. He then handed the meeting over to Mr. S. C. Crathorn, the President of the Midland Juniors, who welcomed the opportunity of holding the joint meeting and paid a tribute to the Wolverhampton Society for the valuable work which it was doing, particularly under the leadership of Mr. Reynolds.

SULPHATE OF AMMONIA—

(*Concluded from p. 36*)

appreciative audiences of farmers. Lectures were given throughout all the selling regions of the agents and there was a big programme of demonstrations to farmers on upwards of 100 farms.

The total output by the by-product members registered as Grade I producers during the year was 134,000 tons, representing 45% of the total make. In addition producers with a total output of 19,000 tons per year are making Grade I salt intermittently. The Technical Sub-Committee meetings continue to be well attended, and an increasing number of members are taking part in the discussions.

Awards for Long Service

Twelve employees of the Parkinson Stove Co. and Monitor Engineering and Oil Appliances, Ltd., of Stechford, Birmingham, with a total of 547 years' service received presentations on December 22. Two of them, Mr. T. Williams, with 51 years' service, and Mr. M. Poole, with 50 years' service, each received gifts valued at £50, and the remaining ten gifts worth £25. They were Messrs. G. Jarvis (48 years' service), H. Morgan (48), J. Smith (47), G. Price (47), J. Oliver (45), E. Bennett (44), H. Nicholls (43), G. Hems (43), G. Apperley (41), and R. Gowdie (40).

All twelve belong to the Parkinson and Cowan group Long Service Association, whose members have all given at least 21 years' continuous service. It is the practice to give each member a sum of money on retirement based on length of service, but these presentations, made by Mr. R. J. Rogers (Chairman of the Parkinson Stove Company) were supplementary ones granted by the parent board of directors.

BRITISH TAR CONFEDERATION

APPOINTMENT OF OFFICERS

At the Annual General Meeting of the British Tar Federation held last month, the following were elected as Officers of the Confederation for the year 1955-56.—President: Sir Harold C. Smith, K.B.E., D.L.; Honorary Treasurer: Mr. L. W. Blundell; Chairman of the Executive Board: Mr. Henry F. H. Jones, M.B.E.; Vice-Chairmen of the Executive Board, Mr. R. H. E. Thomas, O.B.E., and Mr. Stanley Robinson.

The Executive Board consists of ten representatives nominated by each of the Association of Tar Distillers, the British Coking Industry Association, and the Gas Council, and one representative nominated by the Low Temperature Coal Distillers' Association of Great Britain Limited, Commander Colin Buist, M.V.O., R.N. (Retd.). With one further nomination still to be made by the British Coking Industry Association the following constitute the Board for the year 1955-56.

Representing the Association of Tar Distillers

Mr. L. W. Blundell	North Thames Gas Board
Mr. C. E. Carey	South Eastern Gas Board
Mr. J. Colligon	Dorman, Long (Chemicals) Ltd.
Mr. E. Hardman	E. Hardman, Son & Co. Ltd.
Mr. C. Lord	Lancs. Tar Distillers Ltd.
Mr. Wm. McFarlane	Scott. Tar Distillers Ltd.
Mr. Stanley Robinson	Midland Tar Distillers Ltd.
Major A. G. Saunders	The Prince Regent Tar Co. Ltd.
Mr. J. B. Vickers	Yorks. Tar Distillers Ltd.
Mr. W. A. Walmsley	Thomas Ness Ltd.

Representing the British Coking Industry Association

Lt.-Col. P. F. Benton-Jones	United Coke & Chemicals Co. Ltd.
Mr. J. Berresford	Staveley Iron & Chemical Co. Ltd.
Mr. G. W. J. Bradley	National Coal Board (East Midlands Division)
Mr. K. McK. Cameron	Stanton Ironworks Co. Ltd.
Mr. F. W. O. Doddrell	National Coal Board (Nth. Eastern Division)
Mr. C. F. Dutton	National Coal Board
Mr. C. M. Frith	South Yorkshire Chemical Works Ltd.
Mr. C. F. Sullivan	National Coal Board (South Western Division)
Mr. R. H. E. Thomas, O.B.E.	National Coal Board

Representing the Gas Council

Mr. S. Black	Northern Gas Board
Mr. D. D. Burns, O.B.E.	Scottish Gas Board
Mr. E. H. Harman	East and West Midlands Gas Boards
Mr. W. Hodkinson, O.B.E.	North Western Gas Board
Mr. W. K. Hutchison, O.B.E.	South Eastern Gas Board
Mr. Henry F. H. Jones, M.B.E.	Gas Council
Mr. A. McDonald	North Eastern Gas Board
Mr. M. Milne-Watson, C.B.E.	Eastern and North Thames Gas Boards
Mr. J. Powdrill, M.B.E.	Wales Gas Board
Mr. S. E. Whitehead, O.B.E., J.P.	South Western and Southern Gas Boards

We regret that in our issue of December 28 on p. 871, we erroneously described a group taken at the Institution of Gas Engineers 92nd Annual Meeting as including Colonel W. R. Glover and Mrs. Glover. The lady on Colonel Glover's left was, in fact, not Mrs. Glover but Miss Jessie Frith.

THE MANCHESTER GRID*

By L. S. CROWLE, B.Sc., M.Inst.Gas E. †

Left: *The Partington compressor house.*

THE area served by the Manchester Group of the North Western Gas Board comprises 210 sq. miles. There are about 400,000 consumers. On nationalisation the Group consisted of six undertakings—viz., Manchester, Salford, Stretford, Altrincham, Knutsford and Wilmslow and Alderley Edge. Certain of these undertakings were large, others small, and the first step towards integration was to consider cost of operation and potential life of each undertaking. The result of this investigation is summarized in Table 1.

It was quickly decided that the Wilmslow and Knutsford works should be closed down, and soon after it was decided that the works at Leigh, Lymm, Middlewich, Northwich, Sandbach, Tyldesley, and Winsford should cease to operate.

The Manchester grid obviously had to be capable of dealing with the transmission of the estimated surplus quantities to other Groups of the North Western Gas Board, and it was decided that the grid mains should be worked at pressures of up to 10 lb. per sq. in. with the exception of the supply to the Mid-Cheshire area (which has to be worked for some years up to 20 lb. per sq. in.).

The interlinkage position in May, 1949, is shown in Fig. 1. The large diameter supply mains existing at the time are now being worked at relatively low pressures, but as circumstances change it will be possible to increase the pressures to meet future flow demands.

Fig. 1. Interlink mains at vesting date.

Since nationalisation the new mains laid have been designed for an upper limit pressure of 10 lb. per sq. in. However, all these mains, which are of cast iron, were tested to 50 lb. per sq. in. and could easily be worked at 30 lb. per sq. in.

One by one the small works were closed and gas was supplied from the larger production stations in Manchester. The present position is shown in Fig. 2.

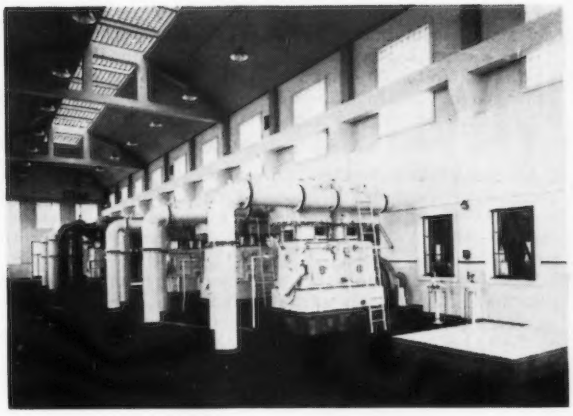
Fig. 2. Interlink mains, 1955.

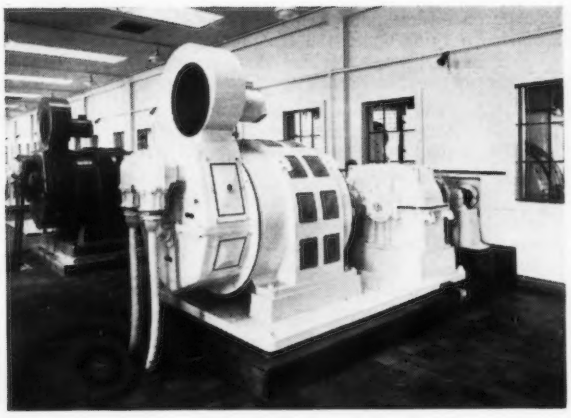
Holder Storage

It is, of course, desirable that a grid system should have a high load factor. Thus adequate storage is essential. Existing holders were inspected to decide which holders should be left in commission and to arrange for the building of new holders at strategic points. As a result of the survey one holder of 2 mill. cu.ft. capacity was built at Partington not only for additional storage but to allow for overhaul of the existing holder when required. At present the Manchester Group holder capacity is 50 mill. cu.ft. compared with 48.1 mill. cu.ft. in 1949.

The flexibility of the grid system within the Group itself has been so good that it has been decided to defer the building of

* From a paper to the Scottish Junior Gas Association (Eastern District).
† Distribution Engineer, Manchester Group, North Western Gas Board.





The compressor room at Partington. The variable speed 460 H.P. motor is shown on the right.

certain other holders which in 1949 were then thought to be essential to the efficient running of the Group.

TABLE I.—*Deposition at May 1, 1949*

Station	Production capacity mill. cu. ft. per day	Cost per therm d.	Decision as to future	Production capacity in 1955
Partington (M/c.)	11.3	5.60	To be extended	23.0
Bradford Rd. (M/c.)	21.0	6.97	To be extended	29.4
Rochdale Rd. (M/c.)	6.0	5.73	To be extended	7.4
Salford	7.4	6.85	To be extended	13.2
Stretford	7.5	5.85	To be extended	10.8
Altrincham	3.2	9.02	Not to be extended	3.0
Wilmslow	0.3	13.55	To be closed	—
Knutsford	0.1	14.35	To be closed	—
	56.8			86.8

Compression Plant

It was decided that a new compressor station should be built at Partington and that additional compression plant should be installed in certain existing compressor houses.

A number of safety alarms have been provided at the Partington compressor station:—

1. Holder high alarm, which operates when the holder is two plates from full.
2. Holder low alarm, which operates when the holder is three plates from empty.
3. 'Compressor excess valve open' alarm, which operates on each compressor when the machine is by-passing gas. This enables the duty engineer to slow down variable speed machines to avoid waste of electrical energy, or to take any steps which may be necessary.
4. Automatic cut-offs, which cut off the electric motors to the compressors in the event of a vacuum occurring on the inlet to compressors. These cut-offs operate selectively and only shut down the whole installation if the vacuum persists after certain compressors have been shut off.
5. A safety system is provided by which the whole of the motor room can be flooded with carbon dioxide in a very short time in the event of a fire. The apparatus is operated from outside the building by the breaking of a glass panel and the operating of a switch.

The ventilation of the compressor house is by the Plenum system.

Emergency lighting by trickle charged batteries is provided to switch on automatically should the main lighting system fail.

The compressors are double acting reciprocating machines manufactured by Bryan Donkin and the electric motors were supplied by Laurence Scott.

All electricity used in the compressor house is obtained from the works power generation plant which is installed in duplicate.

[The author gave details of the compression plant at Partington, Bradford Road, King's Road, Stretford, Rochdale Road, and Salford.]

Effective Storage

The need to use to the fullest advantage existing holder storage in the Group necessitated the installation of boosters at certain stations so that the required governor outlet pressures could be maintained even when the holders are in their upper lifts.

Two outstanding examples of the need for the provision of boosters were Salford works and Gaythorn holder station.

At the Salford manufacturing station it was found necessary to maintain two large holders in their flying lifts to keep the station governors supplied at peak hours. Considerable difficulty was encountered in adjusting the Salford make and the intake into the station from Partington to maintain this position. An electrically-driven 1 mill. cu.ft. per hour booster was installed on the inlet to the governors. Now the full holder storage capacity at Salford is available for use.

At Gaythorn, where no booster equipment is at present installed, of the 4 mill. cu.ft. of gas which can be stored, only 1.4 mill. cu.ft. of gas can be used at peak periods, and since the winter peak hour output at this station is in the order of 2.0 mill. cu.ft. this station has to be supplied at high rates of flow during peak hours, in order to prevent uncupping of holders.

Two 1 mill. and two ½ mill. cu.ft. per hour boosters are now in process of being installed at this station.

Control of Gas Movement

The movement of gas in the Manchester Group at times becomes complex due to a number of factors, some of which are:—

1. Reduction of make at a works due to plant overhaul.
2. Use of the most economic production plant during seasons of light load.
3. Need to move gas at short notice due to breakdowns of production plant.
4. Compensation for the temporary throwing out of use of gasholders when they are required for major overhaul and maintenance.
5. Repairs and maintenance of pipelines.
6. Repairs and maintenance to compressor plant.

It was decided to appoint 'gas controllers' on a three-shift system to record and control gas movement.

Based on the experience in the Manchester Group, the following is a summary of a controller's duties.

Long term, weekly and daily forecasts are prepared by the Group Statistician in consultation with the Group Production Engineer, and these figures are passed to the gas controller.

Working within this framework the controller's duties are as follows:—

1. To receive and log every hour the make and output of each manufacturing station.
2. To compare the hourly make and sales with the day's forecast and in the event of any appreciable deviation, to draw the matter to the attention of a responsible officer.
3. During working hours, changes in the gas manufacturing programme are made by the Group Production Engineer

acting on information given to him by the controller. But outside working hours, the controller has authority to start up or shut down water gas plant acting under guidance previously given to him by the Group Production Engineer.

4. To receive and log data of volumes of gas exported to other groups. All such figures are telephoned in by receiving groups to the controller who passes a daily summary to the Group Statistician.
5. All breakdowns of manufacturing or gas moving plant, or any other serious incidents, are notified to the controller, who passes the information on to the Group officer concerned.
6. To act as a centre outside normal working hours from which any relevant information can be obtained by Group officers.
7. To keep permanent records of output, *etc.*, both in tabular and graphical form.

Considerable care was taken in selecting the men for this work. Before being given any authority, they were sent round all the works and holder stations within the Group to make sure that they understood the general conditions pertaining to the distribution system, and also (a very important point), to make contact with the pressure-men and operators with whom they would be in telephonic communication. This procedure resulted in close liaison between the local operators and the gas control supervisors.

The control supervisor not only deals with the various stations within the Group, but also with certain outside groups, either directly with individual stations or with a group controller according to circumstances.

Plant Maintenance

All compressors, boosters, governors, automatic and hand-operated valves should be recorded on a record card system and given periodic maintenance, and all indicating and recording instruments and alarm systems should be periodically checked and maintained.

While it is not necessary to fit pressure recorders on all governors, it is certainly advisable to fit both inlet and outlet recorders on those installed at certain important points (*e.g.*, on the end of a leg of a main grid line) and it is good practice to install portable inlet and outlet recorders for a period of, say, one week after any particular governor has been overhauled and adjusted.

In the Manchester Group we have installed a short wave wireless system. This system is primarily used for emergency work, but it has proved invaluable in field testing and for control purposes when it has been necessary either partially or wholly to shut down a grid main.

Industrial Gas

IN the course of a talk (illustrated by lantern slides) to the Yorkshire Junior Gas Association on December 10, 1955, Mr. F. Dickinson, Divisional Industrial Gas Engineer, Sheffield and Rotherham Division, East Midlands Gas Board, said that in the Sheffield area the industrial load was about 75%, and in the Sheffield and Rotherham Division of the E.M.G.B. about 66%, of the total load. The industrial staff were centred on Sheffield, operating in the several districts in conjunction with the district managers and other local functional officers.

The author explained that the industrial workshops consist of a fitting shop, a general furnace and erection shop and a welding shop. The mild steel casings of small cutlery furnaces and other special furnaces are made in the welding shop, and the burners and burner equipment, with inter-connecting gas and air piping, are prepared in the fitting shop for assembly in the erection shop, after which the furnace brickwork is built into the casings. The furnaces are then tested prior to delivery and connection to gas and air supplies in the factories.

The foregoing refers to new units. In addition a considerable amount of work is done by the industrial staff on consumers' premises in the rebuilding of existing furnaces and the overhauling of burner equipment. To minimize loss of production time, this is normally done at weekends and/or during works holiday periods.

There is also an industrial laboratory where the work is usually connected with experiments on behalf of consumers in relation to either special gas atmospheres or new processes. Visits are also made to consumers, to check their furnaces or temperature control equipment on site.

Other work is done, on request, in respect of testing new industrial or commercial equipment designed by firms in the area. This is carried out to Watson House specifications to enable initial difficulties to be overcome locally and to save the expense of sending relatively large appliances to Watson House in the first instance. Should a Watson House report be required by the makers, the appliance in its final form can then be sent to London in the knowledge that it will conform to the prescribed standards.

There is a demonstration room where actual work can be undertaken on problems arising from the many processes to be found in the Division, and consumers can inspect typical burners, burner equipment, and a selection of appropriate small and medium sized furnaces. It is even more effective for them to be able to bring their own material, and for their workmen to conduct tests according to their own requirements.

The industrial staff are engaged on direct contacts with industrial consumers, covering the development of gas sales either as direct sales only, or by technical research and experimental work which will eventuate into additional gas usage. They also deal with enquiries, complaints, and the circulation to appropriate gas users of technical information which may be of interest to them. An important feature of their work is the technical service which they give to consumers.

TECHNOLOGICAL EDUCATION

The Regional Advisory Council for Higher Technological Education in London and the home counties has published a bulletin of special courses in higher technology, including management studies and commerce, for the year 1955-56. The bulletin is obtainable from the Council at Tavistock House South, Tavistock Square, London, W.C.1. It includes details of special advanced courses held in London and the home counties region which do not regularly appear in college calendars or prospectuses as part of a grouped course or as subjects offered for endorsement on Higher National Certificates. They are, as a rule, part-time (usually evening) courses, but full-time courses which are specially arranged and are not of longer than three months' duration are also included. A number of the courses are of particular interest to fuel technologists and chemical engineers.

SCHOOL COOKING STANDARDS

The Council for Codes of Practice of the British Standards Institution announces the publication of Code 332.402, 'Gas Cooking Installations (School Meals),' prepared on their behalf by a Committee convened by the Institution of Gas Engineers, and obtainable from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1. It deals principally with the selection and installation of the gas cooking equipment for preparing and serving meals in day schools, boarding schools and technical colleges. The Code recommendations have been designed to meet the general requirements of the 'Standard for School Premises Regulations,' S.I. 1954, No. 473, 'that adequate and suitable facilities shall be provided for a school meals service.' The Code makes specific recommendations regarding planning and consultation between the trades employed and gives guidance on the siting of various items of cooking equipment to avoid cross-traffic and to allow for easy performance of each operation within the kitchen space. The various types of appliances are described and recommendations made on points of design. An appendix gives a table of suggested sizes of equipment, related to the number of diners for whom provision is to be made for the school meals service. This table has been drawn up to meet the requirements of the Ministry of Education. Advice is also given on metering, governors and controls, ventilation and fire precautions.

W-D were actively on site in 1955

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		Tons coal/day
	Aberdeen V	175
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	Christchurch, N.Z.	150
✓	Croydon IV	270
✓	Derby III	380
✓	Dover I	341
	Dover II	341
	East Cowes	245
✓	Edinburgh IV	259
	Edinburgh V	259
	Exeter	377
	Gainsborough III	18
	Glasgow, Provan II	436
✓	Glasgow, Tradeston II	179
	Grimsby VI	80
✓	Irvine III	18
	Lancaster, White Lund	418
✓	London, Kensal Green (Complete Gasification)	50
✓	Rotherham	617
	Solihull III	50
✓	Tingley II	511
✓	Tottenham V	557
	Truro	150
	Walsall II	821

15 NEW COKING PLANTS

	Avenue, Chesterfield	2175
	Beckton IV	603
✓	Cardiff IV	963
✓	Ebbw Vale III	444
✓	Ebbw Vale IV	444
	Irlam IV	431
	Monkton II	695
	Moss Bay III	1159
	Orgreave IV	858
	Pretoria V	1089
	Pretoria VI	1089
	Ravenscraig	1608
✓	Redbourn II	353
✓	Stanton II	918
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The figures following the Contract names denote the number of installations built at these Works.

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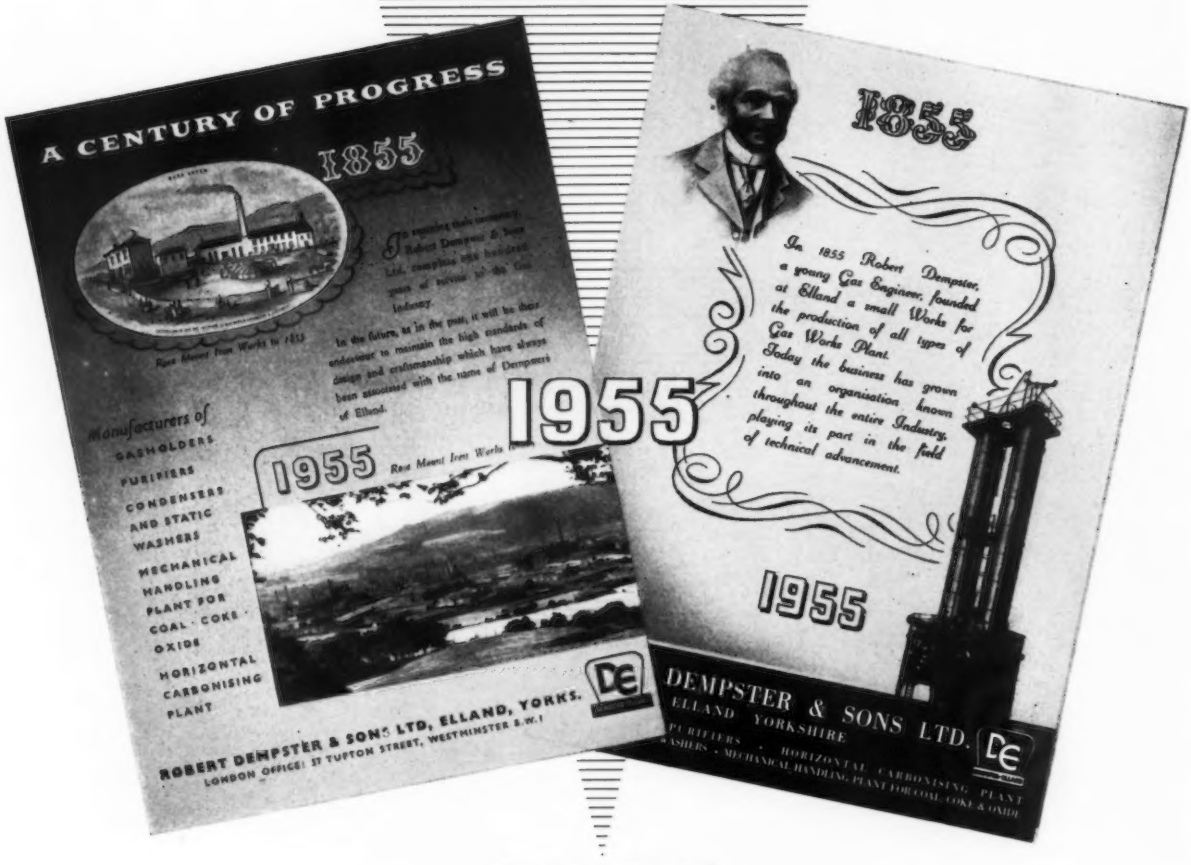
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Methane Drainage in Coal Mines

By C. D. PALMER, A.R.S.M., B.Sc. †

RECENT statistics show that 6% of the world's energy comes from natural gas. Heading the twenty countries that produce natural gas on a measurable scale are the U.S.A. and Canada. Natural gas, such as is found in these countries, is mainly in association with crude petroleum, although some deposits are found independently. The search for natural gas in deposits such as those in the U.S.A. and Canada has been started in this country, and mention is made of it in the Annual Reports and Accounts of the Gas Council and Area Boards for 1954-55.

Natural gas in the form of methane is also found in association with the coal measures of the world. When coal is mined natural gas is liberated into the air that ventilates the colliery. The systematic drainage of natural gas from coal mines was first developed at Mansfeld Colliery in Germany in 1943, and since then it has been developed in many mines on the Continent. It was first introduced in this country in 1950, and is still in the development stage. Only recently the National Coal Board has appointed a mining engineer to supervise this development in one of its areas.

Prior to this systematic drainage, gas had been removed under special conditions from a number of mines for over a century. Point of Ayr Colliery is now a famous example of one of these unique cases, having practised gas drainage for some sixty years. Despite the fact that Point of Ayr and Haig Collieries have established practices for its utilization, many other collieries have not.

Today, and for some time to come, this country is short of power. We are now a nett importer of coal and likely to stay so. What are our chances of developing other sources of power? In this paper Mr. Palmer outlines one particular source that could be developed to add to the prosperity of our country. He uses a hypothetical example to illustrate what, in his estimation, would be the best method to adopt.

Utilization or Sale

Two alternatives are open to a particular colliery which has a supply of methane at hand. It may use it at the colliery for the firing of boilers. This practice has been adopted at both the above collieries and also at additional ones. The second alternative has not been fully exploited, *i.e.*, the sale of methane to the various gas boards. This is possibly due to the fact that the gas industry is unwilling to accept an uncertain supply. It has been difficult for a colliery to guarantee an amount approaching the maximum it obtains. However, on the Continent, this difficulty appears to have been overcome, as several of the Continental collieries feed gas into the national gas grid.

It should not be forgotten that methane has a calorific value of nearly 1,000 B.Th.U. per cu.ft. compared with an average value of 500 B.Th.U. per cu.ft. for coal gas. There are problems associated with the blending of methane with coal gas. These have recently been reported on in a 'Report on Natural Gas and Methane' published by the Gas Council.

The mixture of natural gas and air in colliery working forms one of the major hazards to the extraction of coal. Legislation requires in this country that the percentage of methane in the mine air shall be less than 2.5%, and, where electricity is to be used, less than 1%. It is obvious then that one of the mining engineer's major aims is to minimize the percentage of gas in the air. Nearly all methods employed up to 1950 placed an additional cost per ton on the coal mined. All involved an additional operation being put into practice, the only reward being that the coal could be mined in safety. These methods either prevented the gas from entering the mine air or removed it at an adequate dilution. They in no way paid for themselves, or increased the economic efficiency of the mine. In the drainage of methane from the rock strata before it can enter the ventilating air, we have a third method which offers a sounder economic proposition than the other two. In this method gas is drained from boreholes in the strata associated with the coal seams and piped to the surface. It is then removed from the strata and yet never allowed to enter the ventilation air. The mining engineer has then two products to sell—coal and natural gas.

Methane Concentration

Coal is mined in this country by a method known as long wall advancing. Fig. 1 shows two examples of the lay-out of a long wall face. There is, in principle, little difference between them, except that in the case of the double-unit face, one intake air road serves two returns. The distance between intake and return roadways varies between one and two hundred yards. Coal is always hauled from the face along the intake road. Each day the coal face moves forward an average distance of 4 ft. 6 in., and as it moves forward it leaves behind it a void from which the coal has been extracted, this void being known as the 'goaf.' It is necessary to support the roof of this 'goaf' if the steel props which support the working face are to be withdrawn to be used again and if the conditions on the face are to be maintained. This is most usually done by a method known as dry stone packing. In this method a portion of the roof, behind the face, varying in length from four to ten yards, is blown down by cardox shells. The broken rock thus formed is packed solid over a distance of four to ten yards, thus supporting the roof of the 'goaf.' Fig. 2 shows the layout of a single-unit face complete with packs and wastes and the direction of flow of the ventilating air.

Air flows round the district as shown and in so doing it picks up gas. Along the intake road the pick-up is likely to be small, and this is because the air has a tendency to short-circuit through the 'goaf,' thus carrying the gas towards the return road. Along the coal face the ventilating air picks up from 30 to 50% of its final gas content, its increase being fairly uniform along the face. The remainder of the gas enters the air along the return road; practically all within the first 200 yards from the face.

Gas will tend to accumulate in the district in two places. First, in the wastes towards the return end of the face, and secondly in the broken strata above the 'goaf' up to two hundred yards back from the face. In this area the strata is in a broken state up to a vertical distance of 100 ft. This is due to subsidence taking place, as dry stone packing is only a method of minimizing the rate of subsidence. It is in these broken strata that gas, being lighter than air, will accumulate. The maximum disturbance in the strata will occur near the roadways, and the strata towards the centre of the face will tend to settle *en bloc*, therefore minimizing the cavities formed.

The total amount of gas given off from the district will remain fairly constant over monthly periods after the face has got under way, but there will be daily variations due to barometric changes. On a falling barometer the gas will be forced out of the cavities, while on a rising one it will be drawn into these cavities.

Drilling to Drain

The most common method of draining this district would be by cross measure boreholes. In this method holes are bored from the return roadway, over the 'goaf,' and parallel

† Graduate from the Royal School of Mines, London, and a Directed Practical Trainee of the National Coal Board.

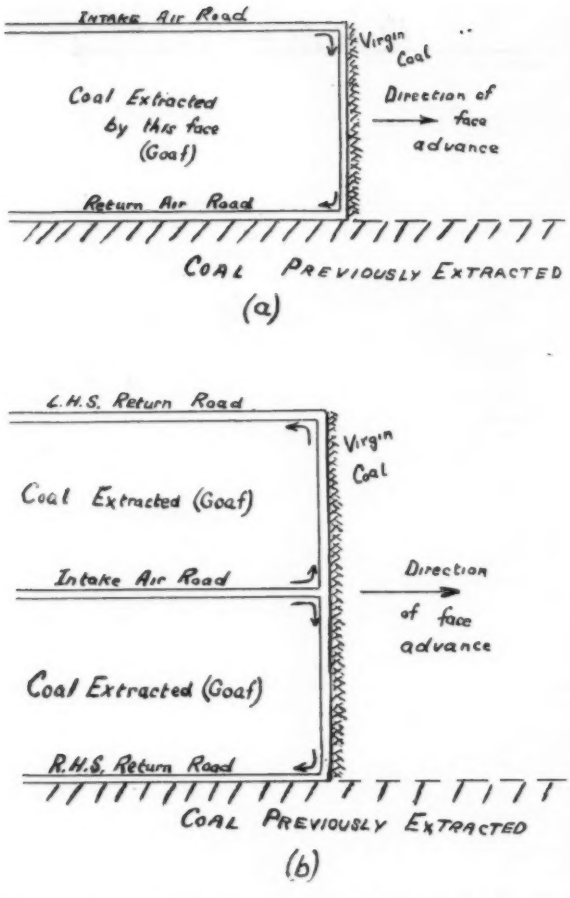

Fig. 1. Two examples of coal mining by long wall advancing: (a) the single-unit face; and (b) the double-unit face.

to the face. This is shown in Fig. 2. The holes are 2.5 in. in diameter and up to 200 ft. in length, and are drilled at 45° to the horizontal. The first 30 ft. of these holes are drilled at a diameter of 4.5 in. in order that a 3 in. diameter pipe may be inserted. This pipe is then cemented in position, thus preventing any leakage of the mine air into the borehole. A German machine, the Nüsse and Gräfer Fortchritt P.IV/6, is usually used to drill the holes. It consists essentially of a steel frame, on which is mounted a rotary drilling head. This is a 6 H.P. compressed air motor, which is used to rotate the drilling bit. The drilling head is moved forward into the drill hole by a 2 H.P. motor which drives the pinion that engages a toothed bar on the steel frame. A thrust of up to four tons can be obtained on the bit by this motor. The drilling rods used are 5 ft. 6 in. in length and screw into each other. A Fir Tree tungsten carbide drilling bit is used, which may be described as a multi-stage bit. The first stage drills a hole of 1.5 in. in diameter, and a secondary stage will enlarge this to 2.5 in. to 3 in., and a third stage to 4.5 in. when drilling for the stand-pipes. During the drilling, water is pumped up the hollow drill rods in order to keep the drilling bit clear and to prevent rock chippings from accumulating in the hole. It is essential that once a hole has been started it should be drilled in a minimum possible time. Should a number of shifts elapse between the commencement and the finishing of a hole, the ever-present strata movement is likely to fasten the drill rods in the hole. It is possible, under average conditions, to drill up to 200 ft. in a shift, and no longer than three shifts should be taken over any one hole. This is excluding the shift required to set the machine.

Cross measure boreholes drilled over the old 'goaf' are not the only method of drainage. Holes may be drilled in advance of the coal face or vertically upwards or downwards, but it has been found that holes drilled over the 'goaf' as described prove to be the most productive. This is due, possibly, to the fact that they pass through the area of maximum disturbance in the rock strata. The life of these holes varies; some holes will be found to produce little gas, while others will have a high productivity as long as they are in the 200 yards of 'goaf' immediately behind the face, *i.e.*, over a period of approximately nine months.

Gas may also be drained from a coal face which has been worked out, and when this occurs the roadways leading into the district are sealed. If a pipe is placed through this stopping it will be possible to drain off, at a low suction, gas that has accumulated behind a stopping, but the purity of this gas will tend to be lower than that obtained from boreholes.

Gas pressures encountered at the boreholes vary. Occasionally the static pressure will be high to force the gas along the pipe to the surface. Usually it will be found necessary to apply suction to the holes so that the maximum quantity can be removed. Where it is necessary to apply suction a pump is usually installed on the surface. The common type in use is the Nash Hytor gas pump, which is a water sealed centrifugal pump, and is driven either by a flame proof electric or compressed air motor of approximately 30 H.P. It is always necessary to have a bypass pipe where a pump is in use so that gas can drain freely under natural buoyancy if the pump had to be stopped for maintenance or in the case of a breakdown. The suction that can be obtained with such a pump can be varied between 0 and 25 in. Hg, and the largest pump has a capacity of 400 cu.ft. per min.

Once these holes have been drilled gas will emit freely from them in varying quantities. The holes are then coupled to the gas main which varies in diameter from 8 in. to 14 in., depending upon the quantity of gas to be carried. In a colliery where only one district is to be drained, the main will usually be only 8 in. in diameter, whereas in a colliery where several districts are to be drained it will be 14 in. in diameter. The gas main carries the gas to the surface of the colliery. It is always situated in the return air roads as, should a main be damaged, there would be a minimum contamination of the mine by the gas liberated. Situated at intervals along the main are stop valves, so that any section of the main can be isolated in case of damage. Isolation valves are also to be found on the pipes leading from the boreholes to the gas main. Water traps with drainage tanks must be installed where accumulations of water are likely to occur, thus preventing a water seal developing in the gas main. An important water trap is that situated at the bottom of the shaft which carries the gas main to the surface.

Instrumentation

Underground

Provision is made for sampling individual boreholes and the gas main, usually by inserting small pett-cocks on the pipes. Samples are withdrawn by use of a small hand pump in order to counteract the negative pressure. Individual pressures are measured at boreholes by use of U-tubes filled with either mercury or water depending upon the suction encountered. Flows are measured by orifice plate meters. An orifice plate is inserted in the main, and the differential pressure is measured by a water gauge; for low flows an inclined gauge can be used. Samples are analyzed by use of a Haldane apparatus in the mines laboratory or by use of a Mine Safety Appliance Methanometer underground.

Surface

On the surface, instrumentation is often further advanced. Here a distinction may be drawn between the instrumentation employed in drainage and that for utilization. It is proposed only to mention that connected with the former. Where an exhauster is employed instruments are used to indicate any falling off in purity or rise or fall in suction. Also warning devices are used to ensure that the water level in the storage tank for the suction pump remains adequate. A calorimeter is usually installed in a separate house. Gauges also indicate the pressure and flow.

Control is exerted on the unit at the surface by variation in suction and quantity of the exhauster. Individual underground holes may be throttled by the stop valve inserted between them and the main, but this is not always as effective as might be hoped as boreholes are often interconnected in the strata above.

An Example

So far this article has dealt in general terms with the drainage of gas from a working district in a colliery. It is now proposed to give some figures that are likely to be obtained from such a face as shown in Figs. 2 and 3. We shall assume that the seam is gassy and that there are some 14,000 cu.ft. per min. of air passing around the district and that prior to methane drainage the following percentages of methane were encountered:

(1) Near the face on the intake road, 0.30%.

(2) Near the face on the return road, 1.5%.

(3) 350 yards from the face on the return road, 2.5%.

Due to the high percentages it would be legally impossible to continue working the face. To overcome this it would be decided to install a methane drainage unit. Five holes might be drilled at 25 yard intervals along the return road to cover the entire length of roadway adjacent to the 'goaf.' The first hole would be in virgin ground and the last hole some 10 yards from the face. An 8 in. pipe range would then be laid along the return road to feed into a 10 in. diameter gas main leading to the upcast shaft. The total length of this main might be 3,000 yards. A Nash Hytor vacuum pump could be installed on the surface with a maximum capacity of 275 cu.ft. per min. Within 24 hours of commencing full scale drainage the quantity of gas in the mine air would probably drop by 50%, and the amount of gas emitted along the return would drop by an even greater percentage. The percentages of gas in the mine air might then be as follows:

(1) Near the face on the intake road, 0.25%.

(2) Near the face on the return road, 0.75%.

(3) 350 yards from the face on the return road, 1.25%.

The total quantity of gas removed from the district in the pipes and in the mine air would be found to be only slightly higher than it was prior to methane drainage, *e.g.*, 370 cu.ft. per min. of methane as against 350 cu.ft. per min. before drainage. Thus 175 cu.ft. per min. of methane would be removed in the gas main. The optimum suction employed might be in the region of 80 in. W.G., with the purity at this suction varying between 65 and 75% methane. It would be found that by increasing the suction a larger quantity of methane could be drained at a correspondingly lower percentage of purity. As the life of the face might be estimated at three years, it would appear possible to guarantee a supply from this one district of some 175 cu.ft. per min. of methane at 70% purity, continuously for that period of time.

Although these figures are not detailed, the important fact to realize is that 50% of the gas from the district would be piped to the surface. J. G. Bromilow and J. H. Jones, in an article, 'Drainage and Utilization of Firedamp,' which appeared in the June and July, 1955, issues of *Colliery Engineering*, estimated that the equivalent of all methane discharged from coal mines is 1,000 mill. therms a year. Thus, if 50% of all the methane in the mines of this country could be utilized as a fuel by means of methane drainage, the country would have an estimated supply of 500 mill. therms a year from this source.

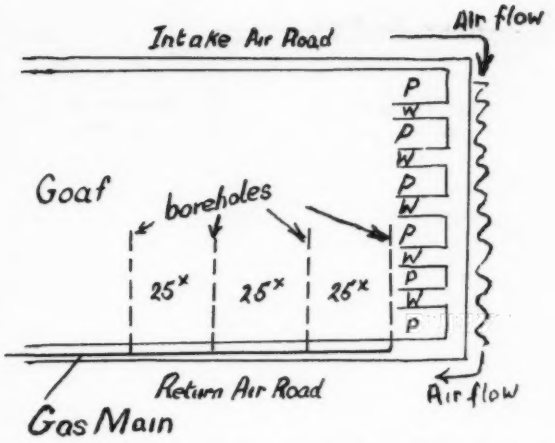

Fig. 2. Drainage holes are bored from the return roadway, over the 'goaf,' and parallel to the face.

In the same article, it was suggested that the drained methane could be used for the following purposes: (a) As a fuel for steam boilers; (b) as a fuel for internal combustion engines; (c) for distribution by the gas boards, after modification to render it suitable for general and industrial use; and (d) as a raw material for the chemical industry.

The most accessible, and the most obvious, of these possibilities is the distribution by the gas boards, due to the proximity of gas mains to most collieries. But before the boards can buy the methane they must (a) be assured of a constant supply, and (b) be able to process the methane so that it becomes completely interchangeable with the gas obtained by the carbonization of coal. The first problem depends largely upon the storage facilities. The 'goafs,' from which the methane is drained, can serve to a certain extent as gasholders, but these can be augmented by the construction of gasholders at the pit-head. The second problem can be tackled either by mixing the methane with blue water gas, or by reforming, *i.e.*, converting the methane into carbon monoxide and hydrogen by reaction with steam, and then mixing the reformed gas with untreated methane to give a gas of the desired calorific value. If the gas boards would purchase as much drained methane as the coal mining industry could supply, they would help to cancel an enormous wastage that is occurring, and also contribute towards greater safety in the mines.

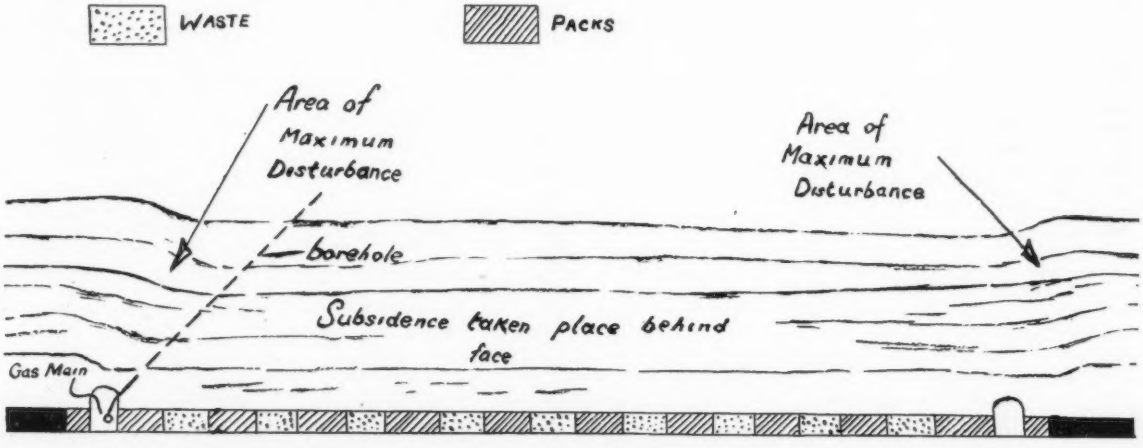

Fig. 3. The probable strata conditions that would prevail above the 'goaf' of a single-unit coal face are illustrated. The areas of maximum disturbance would occur in the strata towards the sides of the 'goaf' where there would be the greatest accumulation of methane, especially above the return air side.

Solid Smokeless Fuel and the Gas Industry

In this exclusive article, Dr. J. G. King comments upon the present gas coke position, particularly in the light of the paper presented to the Coke Symposium of the Institution of Gas Engineers Research Meeting.

IT has taken the gas industry a long time to realize that the position of a really worthwhile quantity of reactive solid fuel is well within their powers. The idea of a symposium of papers (I.G.E. Publ. 476, 1955) to review the situation was good but it has not revealed anything that was not known already. At Bournemouth two years ago Sir Harold Smith put his finger on the crux of the matter when he indicated that the desired coke could be produced by the industry provided fuel prices and coal cost could be suitably related. It must be assumed that Sir Harold meant suitable fuel and not just gas coke produced with the emphasis on gas production and with little real attention to the ignition or combustion properties of the coke. It does indeed seem clear that technical factors are quite well realized and that the basic problem is one of an economic balance between the cost of coal and the realizable prices for gas and solid fuel. Mr. H. F. H. Jones' paper also stresses this view. The difficulty of achieving a suitable balance in the past has overweighted the technical considerations of improving coke quality and the industry has thereby failed to take the opportunity of replacing a really worthwhile proportion of the domestic coal which is so heavy a contributor to atmospheric pollution.

Much of the failure is due to the imperfect nature of the appliances available to replace the coal-burning open grate and the unreasoning adherence of the builder to coal-burning grates which will not burn coke. The coke-burning stove has certainly been successful, but might not have been, again for reasons of coke quality, if anthracite had been available in greater quantity.

Gas is, of course, a smokeless fuel *par excellence*, but it does not meet the important household requirement of storage in the home. Coke does provide a storable smokeless fuel, although without greatly abating the nuisance of oxides of sulphur but, if it must meet an expanding market, it must acquire the basic requirements of reasonably easy ignition and free-burning properties, and must be supplemented by the provision of suitable domestic open grates in which it can be burned to provide heat at a high level of efficiency.

Coke 'Combustibility'

If we use the word combustibility to signify generally ease of ignition, free-burning properties, and speed of pick-up on refuelling or on increasing the rate of access of primary air, we can review briefly the effects of coal type and method of carbonization. It does not seem to be fully realized yet that these are the main factors, or that the effect of carbonizing temperature on the economics of gas manufacture has not been fully evaluated.

Taking types of coal first, it should be clear that the combustibility of the coke decreases with decreasing carbon content through the range of caking power from Durham coal (C.86, type G_4+), through Yorkshire coals (C.86-84, type G_4 to G_3), to the Nottinghamshire type coals not normally used for gas manufacture (C.83-82, type G-C), but which are used in Scotland owing to the scarcity of coals of higher caking power.

Taking types of plant next, coke combustibility decreases in the order—coke-oven—horizontal retort—intermittent vertical chamber—continuous-vertical retort. The worst combination is, therefore, Durham coal and the coke oven, and the best is low-carbon coal and the continuous-vertical retort. The deleterious effect of high-carbon coal can be reduced by blending both low-carbon coal or coke, and that of the oven by the reduction of width as from the coke oven of, say, 16 in. to the 12 in. intermittent vertical chamber.

The effect of temperature is not wholly that of leaving some volatile matter in the coke, but rather the avoidance of over-graphitization. At one time it was considered to be of the utmost importance to remove the last possible therm of gas, and the residual volatile matter in the coke was no more than about 0.2%. Dr. E. V. Evans was a pioneer in pointing out the beneficial effect of leaving *some* volatile matter in the coke and the expedient is still used by the South Eastern Gas Board, as described in Mr. J. E. Davis' paper to the recent Coke Symposium. The loss of gas yield in such procedure is probably fully discounted by the lower consumption of fuel since the last 2.7 therms of gas per ton may consume 10 therms of fuel (2.5% to 0.7% volatile matter in the coke) as against about 28 therms per ton down to a coke volatile matter of 2.5%.

The effect on coke combustibility is, however, only small in relation to what is really necessary, as would have been very clear if Mr. Davis had added to his Fig. 2 similar data for coke made from a low-carbon coal in a continuous vertical retort operated at a reduced temperature as described by the present author ('GAS JOURNAL,' Vol. 279, 168). There is also the difficulty that volatile matter cannot remain uniformly distributed in a coke made in wide ovens, and the coke cannot be other than variable in the important factor of combustibility.

Reduction of carbonizing temperature is, of course, an expedient which can be applied only if some change is made in coal cost or coke price to overcome the smaller yield of gaseous therms. It has been done on a small scale in Edinburgh for many years and could be extended to other areas such as the densely-populated Midlands. The Birmingham experiments described by Mr. Pickering may help this forward but it is clear that a new economic basis must be established first; in Edinburgh 'Grancole' sells at 2s. 6d. per ton above coke prices.

Choice of Coal

The choice of coal to give the most combustible coke with the carbonizing plant now available is easy, but considerations of cost of transport, and cost per therm of gas, constitute real economic limitations. The outstanding case is London, where the cheapness of seaborne coal limits choice mainly to Durham coals and probably also to the use of ovens. It is not clear, however, that the use of blends with rail-borne coal of lower carbon content, or sea-borne coal from a port other than Newcastle, could not find an economic solution in the sale of more reactive coke at a higher price per ton. This price could probably be deduced from the recent work on the carbonization of blends at the Fuel Research Station.

Taking choice of coal, therefore, with the other factors, it does seem that the solution to the problem of the gas industry and reactive solid fuel is to be found in economic studies to provide a balance between coal cost (including transport), gas yield and cost, and a sale price for the fuel which will allow the industry to replace a really high proportion of household coal.

Increased Sales of Solid Fuel

There remain the two other important factors of (a) increase of coke available for sale and (b) the introduction into homes of suitable appliances of high efficiency. Mr. Jones' paper to the Symposium and that of Dr. Burns dealt with possibilities in replacing works fuel by coal. Probably the main issue is that, from every ton of coke made there is now lost to the sales

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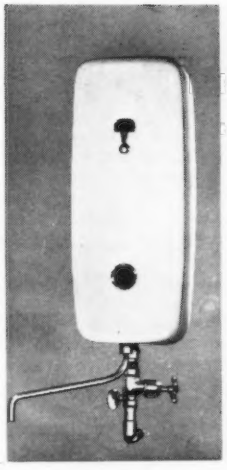

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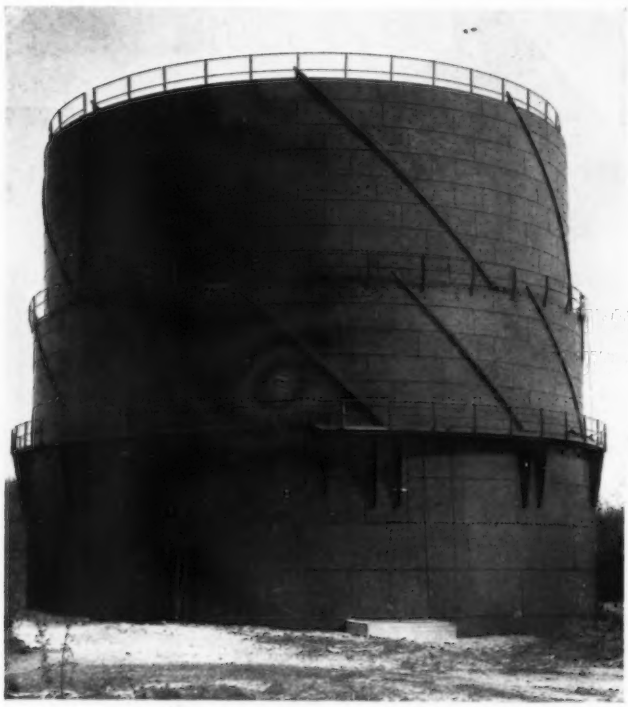

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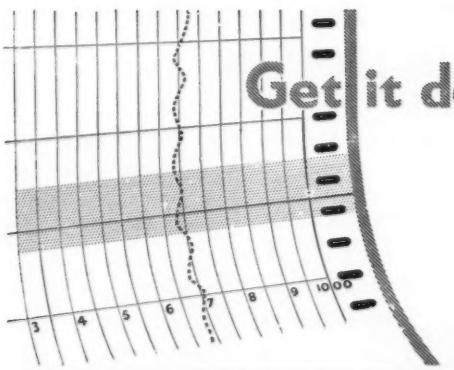

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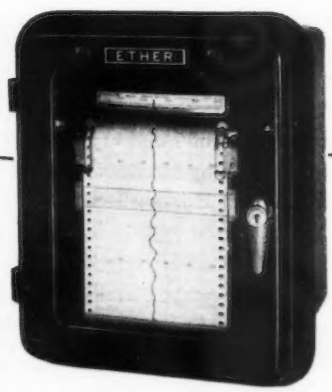

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manager the 4 cwt. of this fuel which are consumed in retort heating. This coke is not breeze, but material of average quality which could provide a high proportion of sound coke for sale. If the country must have solid smokeless fuel a determined effort might be made to use independent gas producers of modern type which would consume small coal and release the coke to the domestic market. A gas producer of the G.I. predistillation type would seem to have great possibilities in this direction. The quantity of coke so represented (4 mill. tons per annum) completely dwarfs the 0.8 mill. tons of solid smokeless fuel now manufactured in other industries. Has the question been given the thorough examination which it deserves?

The second consideration of coke-burning appliances harks back to the days of the controversy about the open coal fire and low-temperature carbonization. 'Low-temperature' coke was developed to burn in the inefficient open coal grate then existing, and it did so with appreciable advantages in cleanliness and high radiant efficiency. Today there is no need for such a high standard of combustibility since many grate designs exist which will, by adequate control of primary air, burn either coal or coke. In addition, coke-consuming stoves have reached a high level of performance. The grates do demand, however, for optimum performance, a more combustible fuel than average gasworks coke, and this would be in greater demand if even the two factors of greater ease of ignition and greater speed of recovery on refuelling could be improved as suggested. Stove performance would also benefit from improved coke combustibility. Probably some reasonable legislation would be necessary to make the builder install such grates in new housing schemes. This could be a slow process but it would allow time for improvement of coke quality to keep pace with the rate of utilization in new appliances, and for the gas industry to sweep the market.

Much emphasis has been placed lately on the advantages of convector grates, and it has been made evident that the combination of a reduced chimney throat to avoid over-ventilation, with a free-standing convector grate, may increase efficiency —and reduce consumption—of coke by some 60%. What has not been made so clear is that the feeling of comfort, so difficult to measure but so very evident, may be obtained in a manner which frontal radiation can never achieve satisfactorily. This feeling of comfort is imparted by the circulation of warm air, and from the free-standing fire it may come from the hot surface, but preferably from a built-in convector. A stimulus to the introduction of such appliances may well be given by the offer of the Institute of Fuel, in connection with its forthcoming symposium on domestic heating, of three prizes for designs of settings to accommodate such free-standing grates (J. Inst. Fuel, 1955, 28, 630). The prizes cover (a) low-cost installations, (b) medium cost, and (c) conversions.

In this project is a further incentive for the gas industry to be the universal provider of reactive solid smokeless fuel to an extent which will represent a major contribution to the pursuit of a cleaner atmosphere.

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*The Preparation of Coke for Sale**

By V. E. CHANCELLOR†

THE attention of all serving the gas industry is currently focused on the Beaver Report and there is perhaps some apprehension of the full implications arising from its recommendations being implemented. Certainly both the quality and the quantity of the smokeless fuel we produce and process for sale are going to be prime factors in meeting the challenge it offers to us as one of the carbonizing industries.

While it is outside the scope of this paper to table and/or discuss the various production techniques worthy of exploration in endeavours to increase the coke productivity of orthodox gasworks plant or to surmise what Beaver coke quality might demand, it is suggested that whatever physical inherent characteristics of the coke substance might have to be met they may be substantially, even completely, nullified if efficient and consistent size grading is not accomplished in the subsequent preparation train. Furthermore the increased volume of sales will have to be met in such a way as to ensure that preparation costs are at a minimum.

The centralization of gas production has naturally resulted in reduced preparation charges per ton of coke prepared and sold from the production station. This has assisted in offsetting in most cases the increased distribution costs arising from producing further away from the point of demand and either part or whole of the reduced revenue arising from marketing a better prepared product. In some cases centralization has resulted in the coke market of the bulk supplying works being subjected to considerable changes foreign to its own local market, but such changes on investigation can and have had to be successfully reconciled.

The coke produced in continuous vertical retort installations, while more friable, is more reactive than cokes produced in other types of plant. 75% of the carbonizing plant in the North Western Area is of the continuous vertical retort type.

An investigation is in progress at 26 works of the Board to ascertain what is the variability of the cokes produced with regard to moisture, ash, volatile content, C.A.B. and ignitability as determined by the fire test, and size grading (current results are given). The survey is to be continued until a full 12 months' results are available when they will be statistically analyzed to assess the relative effects of each property on the fire test performance. Attempts will be made to determine whether or not there is any relation between C.A.B. value and fire test performance.

Quenching and Conveying

In the conveyance of coke from retort house to screens (including means of quenching) the essentials are to avoid unnecessary breakage and unduly high moisture content in the cooled product.

In the continuous vertical retort, coke is quenched *in situ*, wholly or partially, by the steam admitted for the water gas reaction and/or by water sprayed into the bottom castings primarily to obviate dust nuisance at discharge. Recently, quenching has been effected by the carrier gas taking the place of steam, but water sprays are also used as under orthodox operating conditions. With intermittent vertical chambers the important feature is the coke wharf where final drainage is effected to obviate high moisture in the cooled coke. Coke from horizontal retorts is cooled by water in the Fleuve system of water trough conveyance in which regulation of the speed of flow in relation to length of trough permits a substantial control of moisture content (with the incidental advantage of allowing the coke to retain its volatile matter due to 'quick quenching'), and in the older system of hot coke bar conveyors in which the coke passes under a series of controllable water sprays. In both intermittent systems the immersion tank in conjunction with telpher skip transport is also used.

Dry cooling plants, in which a portion of the sensible heat of the coke is recovered in the form of steam, are installed at Burnley and Stalybridge in the North West. Among their advantages is the fact that coke containing shale or bat is less likely to explode on heating when dry quenched since such explosions are due to the production of steam from occluded moisture on heating.

The chief conveying systems are band conveyors, gravity bucket conveyors, telpher and skip hoists. The first are acknowledged as the most economical method of transporting coke over long distances with low power and maintenance costs, with the minimum of coke breakage. Their use is restricted to

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* From the paper presented to the Manchester and District Juniors Association of Gas Engineers on November 30.

† Senior Production Engineer, North Western Gas Board.

inclinations over 20° to the horizontal and generally other means of elevation must be added to it. The useful life of the gravity bucket when conveying coke is low 'and the incidence of coke breakage can be quite large.' The telpher is favoured in some instances because it can be used for conveying coke to and from stock as well as to the screening plant; coke breakage with this system can also be quite substantial. The skip hoist is useful particularly in some cases where ground space is limited.

Coke Screening

Screening may follow either of three main methods: by removing first the smallest product and then the larger sizes in ascending order; by removing the pieces in the reverse order; by first using a scalping screen to take off the largest sizes prior to screening the remainder by either of the aforementioned methods. The inherent advantage of the second method, which automatically begins with the scalping screen, is that while the scalping screen removes the load to be carried by the following screens, both assist considerably in reducing breakage of the larger sizes.

The author describes briefly the several types of screen used in the gas industry. The flat opposed reciprocating tray screens eliminate the necessity of individual conveyor arrangements between screen meshes—they act as distributors—saving headroom and capital expenditure.

Elimination is in ascending order of size; but the descending order is possible with the screens erected at Swan Village where 'below each screen runs a reciprocating dead plate to receive the through material and convey it to the next screen,' the retained material being ploughed off at the end of each screen. Tray screens may be horizontal or inclined. The oscillating tray screen is given a combined vibratory and reciprocating motion.

Vibratory screens may be of two types, the vibrating chassis or the vibrating mesh, the latter being generally confined to debreezing. These screens lend themselves to elimination in descending order of size, but they require inter-connecting conveyors. The 'meshes' may be either of woven wire, welded wire or (in tray screens) punched plates. Their life is relatively short. Welded wire seems to give slightly longer life than woven wire. Punched plates last much longer particularly if manganese steel is used.

Screen performance is vitally affected by effective and regular feeding; overloading must be prevented and in some cases, underloading. Screen efficiency is defined as: The ratio of the weight of coke passing through the screen to the actual weight in the feed below the aperture size of the screen. Reciprocating screens are not subject to loss of efficiency with underload, but they are very sensitive to overload ('experience indicates, also, that there is need for a percentage allowance to cover for blinding'). On vibrating screens, underloading as well as overloading causes inefficiency. It is important to have a continuous feed to this class of screen.

All screens need constant attention and testing, since considerable financial loss may result from a large percentage of oversize product. In a 6-mill. cu.ft. gas-making plant a loss of 10% oversize in the breeze fraction is shown to represent a loss of £1,700 per year or 0.054 pence per therm.

Factors determining the size of screening plant to be installed are: (1) whether the plant is to operate continuously or be confined to day work; (2) whether duplicate screens are to be provided; (3) whether run-of-retort, or graded coke, or a portion of both is to be stocked.

For day work only to be economically attractive the reduction in operating costs must more than offset the additional capital expenditure for night storage and the reduction in revenue due to the resulting increased breakage. Duplication of screens has advantages apart from catering for mechanical breakdown and routine maintenance. The second line of screens for instance can be used for screening or re-screening reclaimed stock.

Coke Storage

Coke storage is required in two forms: short term hopper storage below the screening plant to cover week-ends and other short periods when transport is not available; long term or seasonal storage when coke production exceeds demand.

The author discusses points in the design of bunkers, which should be of capacity to provide three to four days' coke available for sale. 'For example, a 6 mill. continuous vertical retort installation would require 450 to 600 tons bunker capacity.' He discusses means of reducing breakage in bunkers (*e.g.*, spiral shoots) and recommends that shallow bunkers should be preferred even at the expense of additional length. But in any case debreezing screens are required at outlets to remove fines. He suggests, however, that this is not enough for the larger sizes and suggests 'a guard screen sized up to within 50% of the original screen size,' the through material being re-cycled to the screening plant or transported to a separate hopper for works use, *e.g.*, mechanical producers.

On seasonal storage: 'In September, 1953, the coke stocks of the North Western Gas Board reached the all time record of 438,000 tons equivalent to 28% of the total coke available for sale in that year.' It had a value at that time of over £1,600,000. It is the casual domestic consumers who accentuate such peaks. 'The Beaver Report should improve the diversity factor of demand since the high peaks should be less in proportion.' At the present time the greater the domestic demand the greater the stocking space required.

Storage should be effected on consolidated ground. A site previously used for storage of coal over a number of years is usually sufficiently consolidated; concrete is better but many systems of soil stabilization used for aircraft landing grounds are cheaper. Moisture content generally increases during storage for about the first 12 months and then remains fairly stable. A series of experiments are in hand to ascertain whether any particular size or nature of heap lends itself to minimum moisture content in the 'pick-up.'

Bagging facilities are now an integral component of all modern coke screening plant. They should include debreezing equipment. The fully automatic weigher and bagger is recommended, for one reason because overweight can be reduced to 2 lb. per cwt. bag.

Mechanical handling equipment should be 'versatile,' *i.e.*, it should be capable of other uses on the works, *e.g.*, coal and oxide handling.

Coke Marketing

The market in one locality in the North Western Area has been analyzed and the results graphed. This district has a population of 160,000, the average domestic household comprising four persons, say, 40,000 domestic premises. The weekly sales of coke by grades in the year ended March, 1955, show that practically the whole of the breeze production is sold to one (industrial) consumer, the $\frac{3}{8}$ in. to $\frac{1}{4}$ in. fraction to local industry, the $\frac{1}{4}$ in. to $1\frac{1}{4}$ in. fraction to domestic consumers and the other two grades ($1\frac{1}{2}$ in. to 2 in. and over 2 in.) to local industry plus export.

The gasworks serving the district is equipped with continuous vertical retorts only with a nominal daily output of 9 mill. cu.ft. at 450 B.Th.U. On the basis of average results over the year, 322 tons of coke will be produced. Average fuel consumption was 13.2% and allowing for other works requirements the net production of coke for sale was 10.85 cwt. coke and breeze per ton of coal carbonized. Assuming the plant is base-loaded the coke available for sale per week would be: Over 2 in., 763 tons; $1\frac{1}{4}$ in. to 2 in., 280 tons; $\frac{1}{4}$ in. to $1\frac{1}{4}$ in., 294 tons; $\frac{3}{8}$ in. to $\frac{1}{4}$ in., 245 tons; breeze, 210 tons; total, 1,792 tons.

Annual sales on the same basis show an annual surplus production of 14,410 tons over 2 in. and 3,581 tons of the $\frac{3}{8}$ in. to $\frac{1}{4}$ in. grade, but deficits in the other three grades, with an overall surplus of 1,234 tons. The deficiency of 2,283 tons of the $1\frac{1}{4}$ in. to 2 in. size could be met by using that tonnage of over 2 in. coke in the producers. In practice, too, since the figures take no account of breakage in stocking the deficiency of $\frac{1}{4}$ in. to $1\frac{1}{4}$ in. is likely to be reduced, the surplus of $\frac{3}{8}$ in. to $\frac{1}{4}$ in. increased and the deficiency of breeze reduced. The remaining deficiency of $\frac{1}{4}$ in. to $1\frac{1}{4}$ in. could be made good by cutting the over 2 in. although this is undesirable. A peak load stock of 11,113 tons (1,234 tons of which is surplus to requirements) would have to be carried, equivalent to 13% of the total annual production.

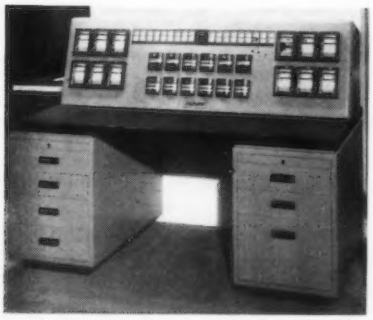
The present domestic sales are 24,786 tons. If all the 40,000 households used coke in place of their present coal supplies one might expect that at least $\frac{1}{2}$ cwt. of coke per household per week would be required, making a total additional requirement of 53,000 tons per annum, an increase of 65% on present total sales.

TRADE NEWS

'In-Line Scannner'

The Evershed In-Line Scanner, which has been developed for the rapid appraisal of plant conditions, is a vertical edgewise centre zero indicator, intended for flush panel mounting, having a frosted perspex internally illuminated window. The pointer produces a shadow in the form of a broad horizontal band at the centre of the window and occupying about three-quarters of its width. Two permanent zero reference marks then complete the span of the window so that at the zero position a single line appears across the centre. Zero adjustment is provided by a screw at the lower right-hand side, while a screw on the left operates a rheostat. This shunts the moving coil, thus producing a variable sensitivity. The illuminating lamp is of the 6.3 V, 0.3 A, M.E.S. type, and is accessible from the top behind the panel without opening the instrument. The connections are by means of an 8-pin plug, the two larger pins being used for the lamp supply. One side of this supply is earthed to the case of the instrument. The lamp supply can be derived from the heater supply of a controller, but it is preferable and usually more economic to use a separate double wound transformer for this purpose.

In terms of current, the sensitivity is given by the amount of current required



The Evershed In-Line Scanner.

to deflect the pointer a distance of its own thickness. For maximum sensitivity, the rheostat screw should be tuned anti-clockwise. Fully clockwise adjustment reduces the sensitivity to zero, and the instrument becomes inoperative. This enables the zero to be checked without disconnection.

The In-Line Scanner is particularly suitable for process contol systems, any deviation from the control point being clearly displayed. Connected in the 'error' circuit, the current which is the difference between measured value and desired value in an Evershed Process Controller Mark IIIA, produces a deflection according to the degree of 'error' and to the sensitivity setting of the unit. The amount of 'error' or deviation that can be tolerated will vary according to the particular duty of the controller in the process. Sensitivity can thus be matched to the process so that a standard deflection occurs for plant error toleration limits.

The indicators are intended to be mounted closely together in a row on a multiple controller plant so that, when not deflected, a single horizontal line appears. A break in the line immediately indicates a control deviation of the plant. —*Evershed & Vignoles Ltd., Acton Lane Works, Chiswick, London, W.4.*

The 3 cu. yd. 6HL type 'Weatherill Hydraulic' coke loader in action.

Large capacity loading shovel

F. E. Weatherill Ltd., have recently added yet another machine to the 'Weatherill Hydraulic' Loading Shovel range which has a special application for coke handling within the gas and coke industries.

Known as type 6HL, this machine is claimed to be unique not only by virtue of having a 3 cu. yd. scoop (a capacity, incidentally, that has not previously been commercially attempted on this type of equipment), but also because of the ingenious patented 'forward crowding' action of the scoop which ensures a completely full scoop at each loading cycle.

The further interesting advantage of this new machine is the fact that an interchangeable 1½ cu. yd. capacity scoop is also available, which means that what might have been a highly specialized machine is, in fact, a versatile one since it can be used for the handling of coal or other materials of similar weight.

A number of deliveries have already been made to gasworks in the Midlands and North of England, and some most encouraging reports of the efficiency and effectiveness of this loader have been received.—*F. E. Weatherill Ltd., Tewin Road, Welwyn Garden City, Herts.*

Improved electric sirens

The weather-resisting qualities of the standard range of G.E.C. sirens are claimed to have been improved by the sealing of those parts of the sirens most likely to be penetrated by water, though canopies are naturally still recommended as an additional precaution for sirens mounted in the open. Sound ranges for these sirens obviously vary according to conditions, but on average they can be heard from ¼ to 1 mile away, according to rating.

The sirens may be used for many applications and are particularly suitable for fire and burglar alarms and for time signals in factories, docks, ships, warehouses, oilfields, estates and mine surface establishments. The lower-rated sirens are suitable for use on police cars, fire engines, ambulances and similar vehicles.

Installation of the sirens is said to be extremely simple. All types may be fitted in any convenient position; upright, horizontal, or vertically suspended from ceilings or cornices. In the open air the upright position is recommended, the siren being mounted on a convenient roof, while in large buildings or factories it may be mounted inverted on a ceiling, or horizontally on a pillar or wall. The sound emission is unaffected by the method of mounting. No special control gear is required, the motors being suitable for direct to line starting.—*General Electric Co., Ltd., Magnet House, Kingsway, W.C.2.*

The Fiat 55LI

A heavier duty version of the Fiat crawler tractor, Model 55L, has recently been announced by Mackay Industrial Equipment, Ltd. This will be known as the Fiat 55LI and it incorporates the results of experience gained with the Fiat 55L in all parts of the world.

The Fiat 55LI has the following new features: A completely cased-in front idler of greater diameter and rim width than that of the Fiat 55L; a larger area of ground contact, there being one more shoe per track than on the 55L; new counter-bored interlocking type track links; the track-frame is braced internally for greater strength; the track rollers are fitted with bellows type seals; the mounting and the guides of the idlers are improved and reinforced; the mounting of the track recoil springs has been reinforced; sprocket guards are fitted and track roller guards are reinforced.—*Mackay Industrial Equipment, Ltd., Faggs Road, Feltham, Middlesex.*

Kitchen heater

By devizing an ingenious method of installing an Ascot 715/1 'balanced flue' multipoint gas water heater under a kitchen draining board, technicians of Ascot Gas Water Heaters Ltd., claim to have gone a long way towards solving the problem of built-in heater installation in the small kitchen.

The modern housewife insists on the maximum window space for her kitchen and on having her sink centrally situated beneath the windows. This often means that the only remaining exterior wall cannot accommodate the conventionally built-in gas water heater without becoming structurally weakened. Ascot's new method of installing the 715/1 not only obviates this problem but is probably simpler and neater than alternative methods. This is because fewer variants can occur during installation.—*Ascot Gas Water Heaters Ltd., 225, North Circular Road, London, N.W.10.*

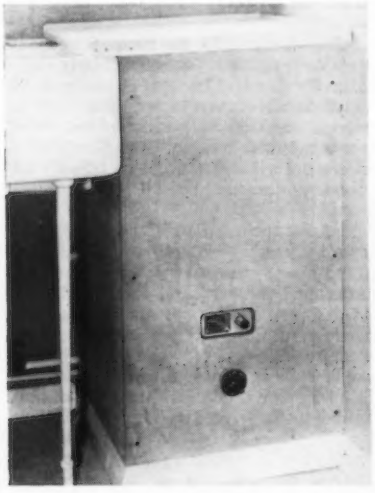
Vehicle inspection ramp

There are numerous occasions when a ramp would be invaluable to most operators or owners of cars, apart from the absolute necessity for a ramp where vehicle servicing or repair is a regular feature. Almost invariably the cost of installation of a pneumatic lift and compressor has proved too prohibitive for all but the larger organizations. The 'See-Saw' ramp now being introduced to the home market is claimed to be the obvious solution to the problem, for not only is the initial cost considerably less than its pneumatic counterpart, but maintenance is negligible.

A great advantage of the ramp, it is claimed, is simplicity and speed of erection or dismantling which can be accomplished quite easily in three minutes, rendering the ramp easily portable as occasion arises. The See-Saw ramp has already been tried and proved on the Continent, where it is in extensive use. It consists of four parts which include two track runners, a rocker beam incorporated with the trestle base, and a stabilizer bar which prevents tracks spreading out and aids a level elevation. The rocker beam is a two-cross piece which is offset, not parallel. This provides a perfect equilibrium when the over-runners touch the second cross-piece. All parts are manufactured in light metal, and the total weight of the ramp is 3 cwt. This weight, although comparatively light, is more than sufficient to support a car up to 2 tons in weight or even heavier cars, providing the wheelbase does not exceed 9 ft. 6 in.

The sequence of operations, in order to prepare the ramp, are as follows: (1) Fit runners to base. (2) Adjust correct track width, (a) by measuring or (b) by adjusting in front of car wheels. (3) Pull out front supports, fix wheel chocks. (4) Run up the vehicle until properly balanced. (5) Apply hand-brake, switch off engine, engage reverse gear. (6) Chock wheels.

It should be noted that the runners are serrated and chocks are supplied to fit, which hold the car in the required position. In a horizontal position the ramp is safely secured by folding out supports and in any position the equilibrium is right in between the outer points. It is said to be possible for one man to balance a car. The working position is with the ramp on the slope which gives a normal 4 ft. 6 in. to 4 ft. 9 in. clearance from ground level to chassis and provides comfortable working conditions for whatever repairs or servicing are required. In addition to two smaller models, a specially constructed ramp for commercial vehicles is also available.—*E. F. Allchin & Co., 137, High Street, Aston, Birmingham.*



The Ascot 'balanced flue' multipoint gas water heater fitted under a kitchen draining board.

TRADE PUBLICATIONS

Pumps

A number of pamphlets recently published by Stothert & Pitt, Ltd., 38, Victoria Street, London, S.W.1, describe a variety of pumps that are manufactured by the company.

Joints and lubrication

One of three leaflets issued by Graphite Products, Ltd., of Battersea Church Road, London, S.W.11, charts the possible applications of the Foliac jointing compounds, which include graphite, red, white, and manganese compounds, and manganese paste. The two other leaflets deal with the Foliac pipe joint compound, and with lubricating graphite.

'Industrial Review'

We have received a copy of the first issue of *Mobil Industrial Review* which is to be published simultaneously in this country, by the Mobil Oil Co., Ltd., Caxton House, Tothill Street, London, S.W.1, and on the Continent by Mobil associates. It will appear quarterly and is intended to cover a wide range of industrial subjects. In this issue the subject that is given prominence is the diesel engine.

Continuous furnaces

The 'Thermo' continuous furnaces, which have been designed on the Halweg system, are described in a pamphlet published by Gibbons Brothers, Ltd., P.O. Box 19, Dibdale, Dudley, Worcs. The furnaces, for continuous billet, bloom, ingot, and slab reheating, are claimed to incorporate many features which represent the latest scientific developments in furnace construction and combustion principles.

Flameproof motors

Lancashire Dynamo & Crypto, Ltd., St. Stephen's House, Victoria Embankment, London, S.W.1, have recently published a pictorial pamphlet illustrating their range of flameproof motors. This is complemented by a leaflet which reports the results obtained at the Buxton Testing Station by the Ministry of Fuel and Power on the L.D.C. flameproof motor while running at 3,000 r.p.m. Lancashire Dynamo Switchgear, Ltd., have moved from Bridgwater to new works at Hurst Green, Oxted, Surrey, where improved facilities are available to meet the growing demand for their distribution switchgear.

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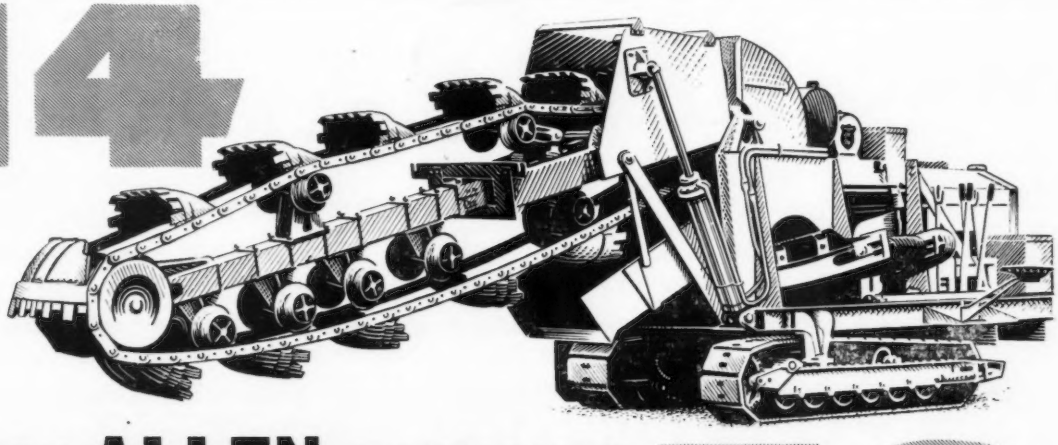

30

A NEW ALLEN TRENCHER

The ALLEN 14-30 completes a range of all-British trenchers world-renowned for continuous hard work, long life, and freedom from breakdown. It can dig trenches from 14 in. to 30 in. wide, to a depth of 8 ft. 6 in., and has many fine features.
For smaller trenches the model 12-21 is the machine, while for wide trenches down to 14 ft. deep the 16-60 has no equal.
There is an ALLEN trencher for *your* job.
Illustrated catalogues gladly sent on request.

JOHN ALLEN & SONS (OXFORD) LTD · COWLEY · OXFORD
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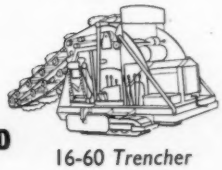
16-60 *Trencher*

12-21 *Trencher*

EWART CHAINBELT CO., LTD.
DERBY, ENGLAND
Driving and Conveyor Chains of the best quality; made of Ley's Celebrated Blackheart Malleable Iron.
ALSO COMPLETE CONVEYORS AND ELEVATORS

CASES FOR BINDING
Quarterly Volumes of the "Gas Journal."
7/6 each, post free
Walter King, Ltd., 11, Bolt Court, Fleet Street, London, E.C.4.

FROM STOCK
10" & 12" New Cast Iron Flanged Pipes 9' & 12'
4" Reconditioned Cast Iron Flanged Pipes 9'.
VALVES
for
GAS, WATER, & STEAM
Sizes ½" to 36" in C.I. Gun Metal & Steel.
STEEL TUBES
All sizes up to 24" Flanged, Plain ends, Screwed & Socketed, Loose Flanged, Victaulic & Unicone Joints.
MIDLAND IRON & HARDWARE CO. (Cradley Heath) LTD.
CRADLEY HEATH, STAFFS
Telegrams: PIPES, CRADLEY HEATH *'Phone:* CRADLEY HEATH 6264-5-6

SINGLE SPEED **GEARED MOTORS**
¼ to 2 h.p.

Final speed between ½ and 480 r.p.m. PRICE LIST ON APPLICATION

EXAMPLE PRICES		£ s. d.
DRIP PROOF ENCLOSED	¼ h.p. A.C. 3-phase 83 r.p.m.	19 8 0
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Vertical Mounting or Ceiling Mounting can also be supplied
QUANTITY AVAILABLE EX STOCK
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Excavators
Concrete Mixers Trenchers Bulldozers
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GAS RETORTS
HARRIS & PEARSON LTD
STOURBRIDGE. ENGLAND.
INSULATING BRICKS, RECUPERATOR TUBES, SPECIAL SEMI-SILICA QUALITY FOR SEGMENTAL RETORTS WITH NO EXPANSION OR CONTRACTION AT 1400° C
Manufacturers of
Fire Bricks, Lumps & Tiles
OF EVERY DESCRIPTION

PUBLISHERS' NOTICE

The " Gas Journal " is published every Wednesday, price **1/6d.**; by post **1/8d.**

Subscription Rates: Home and Empire:—**60/-** per annum; Foreign:—**70/-** per annum. (Both payable in advance.) A copy of the " Gas Journal " Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at **2/-** per line (approx. **7** words)—minimum charge **10/-**. A Box Number address occupies **2** lines, and a further **6d.** is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received **14** days prior to publication if proofs are required. Type area of inside pages **10** in. deep × **7** in. wide; block screen **120**.

BUSINESS MANAGER: S. T. CULLEN

MIDLANDS MANAGER: G. B. Torrance, 42, Wychall Lane, King's Norton, Birmingham, 30. *Telephone:* King's Norton 3868.

NORTHERN MANAGER: Philip W. B. King, Flat 1, 7 Langcliffe Avenue, Harrogate. *Telephone:* Harrogate 67625.

SOUTHERN REPRESENTATIVE: A. Engelhardt, T.D., 11, Bolt Court, Fleet Street, E.C.4. *Telephone:* Fleet Street 2236-7.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.

Telephone: FLEet Street 2236-7. *Telegrams:* Gasking, Fleet, London.

OXIDE

DUTCH AND DANISH BOG ORE
SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright.

Highest prices paid for Spent Oxide

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GAS PURIFICATION LIMITED

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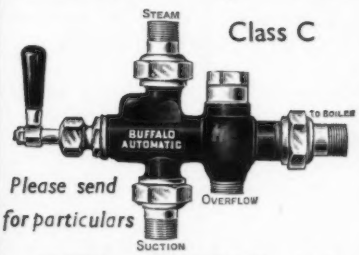
Telegrams: "Purification, Stock, London." Telephone: London Wall 7938/9 & 7930

BUFFALO INJECTORS

Class C



Please send for particulars

GREEN & BOULDING, Ltd.
162a Dalston Lane, London, E.8

"KLEENOFF" *
THE COOKER CLEANER

"KLEENOFF"
FIBRE BRUSHES
RUBBER MOPS

"KAY-DEE" *
KETTLE DESCALER

for resale to the public and in bulk for works use.

BALE & CHURCH, LTD.
7, CROMPTON WAY, CRAWLEY, SUSSEX

APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

SCIENCE GRADUATE, preferably with experience in patent fuel production, and/or coal tar products, required to take charge of a research and development programme. Salary minimum £700 plus, according to experience, etc., pension scheme operable. Apply giving details of age, qualifications, previous experience, etc., to General Works Manager, Lancashire Tar Distillers, Ltd., P.O. Box No. 453, Manchester, 4.

NORTHERN GAS BOARD

A CHIEF TECHNICAL OFFICER (Utilization) is required to take charge of the Appliance Development and Testing Laboratories of the Northern Gas Board at Newcastle-on-Tyne. Applicants should preferably have had experience with an Appliance Manufacturer or in a similar Laboratory, and have an adequate chemical and/or engineering training.

Commencing salary will be within Grade A.P.T. 12 (£835-£960 per annum) of the National Salary Scales for Gas Staffs, according to qualifications and experience.

The successful applicant will be required to pass a medical examination and to subscribe to the Board's Superannuation Scheme.

Applications, containing full details of qualifications and past experience should be addressed to the Divisional General Manager, Tyneside Division, 30, Grainger Street, Newcastle-on-Tyne, not later than January 21, 1956.

December 28, 1955.

TECHNICAL ASSISTANT
FOR
TOWNSVILLE GASWORKS, QUEENSLAND, AUSTRALIA

THE Townsville Gas & Coke Co., Ltd., require a TECHNICAL ASSISTANT, preferably unmarried and aged 23-28 years.

Salary: First year £1,000 per annum Australian Currency.
Second year £1,100 per annum Australian Currency.
Third year £1,200 per annum Australian Currency.

Single fare in a one class ship from England to Australia will be paid and salary will accrue from date of embarkation. Successful appointee to agree to remain in the employ of the Townsville Gas & Coke Co., Ltd., for a minimum period of 3 years.

The above company is a subsidiary of Colonial Gas Holdings, Ltd., which operates 21 gas undertakings in Australia and there are good opportunities for advancement within the parent company. Gas output at Townsville is approximately 100 mill. cu.ft. per annum, produced in Woodall-Duckham intermittent vertical retorts.

Appointee should preferably have passed the Institution of Gas Engineers' examination (manufacture) at the higher grade and have all-round gasworks' training.

Applications for the above position should be addressed to: No. 268, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

APPLICATIONS are invited for the position of SALES REPRESENTATIVE covering Eastern England. Candidates should have had considerable experience, particularly in calling on the Gas Boards. Age 32/45. Applications, giving full details of experience, qualifications, if any, together with salary required should arrive not later than January 16. Apply: No. 270, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

EASTERN GAS BOARD
IPSWICH DIVISION
TECHNICAL ASSISTANT—IPSWICH WORKS

APPLICATIONS are invited from qualified men for the position of TECHNICAL ASSISTANT at the Ipswich Gas Works.

The successful applicant will be concerned chiefly with the day to day management and technical control of a section of plant at Ipswich Works, which has an output of about 8 mill. cu.ft. per day, at present.

The salary will be in Grade 9 (Provincial A of the A.P.T. scales) (£700/£800 per annum).

The successful candidate may be required to pass a medical examination and, unless already subject to a pension scheme by virtue of the Gas (Pension Rights) Regulations, 1950, will be required, if eligible, to join the Board's Staff Pension Scheme within six months from taking up the appointment.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to the undersigned to reach him not later than Tuesday, January 31, 1956.

W. J. COLLINS GARRARD,
Divisional General Manager.

Crane Hill Lodge,
London Road,
Ipswich, Suffolk.

December 20, 1955.

SCOTTISH GAS BOARD
KILMARNOCK GROUP
AYR DISTRICT
TECHNICAL ASSISTANT

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT to the Ayr Gas Undertaking.

Applicants should possess the Leaving Certificate of the Education Department to the standard required by the Engineering Joint Examination Board for exemption from the common Preliminary Examination, or equivalent, or the Ordinary National Certificate of one of the Engineering Institutions. Applicants must be prepared to follow an appropriate course of study leading to an approved qualification in Gas Engineering.

The salary offered will be in accordance with the National Joint Council Scales for Gas Staffs, Grade 2/3, £360-£535 per annum, with placing according to qualifications. The post will be superannuable and the successful applicant will be required to pass a medical examination.

Applications, giving age and full details of training and experience, should reach the undersigned within 14 days of the appearance of this advertisement.

Copies of Testimonials should be submitted, or the names of two persons to whom reference can be made.

C. E. N. FRESHNEY,
District Manager.

Gas Works,
Newton-on-Ayr.

(*Classified advertisements continued on page* 58)

There are all sorts of photographs . . .

. . . ranging from furtive to fine art. Whatever sort you want, the answer is always in the negative, if you see what we mean. But if you want *positive* results in industrial photography you could not do better than contact **Walter King Photographs,** 11, Bolt Court, Fleet Street, E.C.4. (Tel. FLEet Street 2236)

WALTER KING PHOTOGRAPHS

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APPOINTMENTS VACANT (*ctd.*)

MANAGER, aged about 35, required for London Company dealing in piping equipment sold to gas and water undertakings. Applicants should have an engineering and manufacturing background and previous experience in management of a company. Sales experience in the U.K. and export markets also desirable. Reply with full details, education and experience. Apply: No. 271, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

NORTH WESTERN GAS BOARD

CENTRAL LANCASHIRE GROUP
INSTALLATIONS SUPERVISOR—BURY/ROSSENDALE DISTRICT

APPLICATIONS are invited for the above pensionable appointment at a salary within Grade A.P.T. 7 (£620/£700 per annum).

The successful applicant will be responsible under the District Service Manager for the organisation and control of fittings and maintenance staffs, workshop personnel and the supervisory personnel engaged upon the installation of appliances and meters. Candidates should hold a qualification in the gas engineering (supply) and/or in gas fitting and have had good experience in the duties required.

Detailed applications, giving the names of two referees, should reach the General Manager, N.W.G.B. (Central Lancashire Group), Gas Works, Dane Street, Rochdale, within 14 days.

WALES GAS BOARD

DISTRIBUTION ENGINEER—WREXHAM UNDERTAKING

APPLICATIONS are invited for the position of DISTRIBUTION ENGINEER at the above undertaking.

Applicants should be suitably qualified and should have had considerable experience in high and low pressure gas distribution, main and service laying, gas fitting, etc.

The salary will be in Grade A.P.T. 11 (£785/£910 per annum) of the sales agreed by the National Joint Council for Gas Staffs. The post is pensionable.

The successful applicant may be required to pass a medical examination.

A house is available at a reasonable rental.

Applications, stating age, education, qualifications, previous experience and any other relevant information, together with the names of two referees, should be sent to the undersigned on or before January 14, 1956.

J. F. LLOYD,
Engineer & Manager,
Wrexham Undertaking.

23, Salop Road,
Wrexham.

WEST MIDLANDS GAS BOARD

" PRINCIPAL ASSISTANT
CHIEF ACCOUNTANT'S DEPARTMENT

APPLICATIONS are invited from qualified Accountants for the above appointment which carries responsibility to the Chief Accountant for the preparation of the Board's aggregate accounts and for the co-ordination of accountancy practice throughout the Area.

The salary for the post, which is pensionable, will be within the range £1,275 x £50—£1,425 per annum.

Applications, stating age, qualifications and experience, together with the names of two referees, should be adressed to the Industrial Relations Officer, West Midlands Gas Board, 6, Augustus Road, Edgbaston, Birmingham 15, to reach him not later than January 18, 1956.

J. C. INGRAM,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

WORCESTERSHIRE AND HEREFORDSHIRE DIVISION
WORKS CHEMIST—REDDITCH GROUP

CANDIDATES, male or female, should hold an appropriate qualification and should be capable of exercising chemical control of modern gasworks procedure.

The salary will be within Grade 7 of the National Salary Scales for Gas Staffs (Male: £620-£700 per annum; Female: £503-£567 per annum).

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications, giving details of age, qualifications and experience, together with the names of two referees, should be addressed to Mr. C. F. W. Rendle, Divisional General Manager, West Midlands Gas Board, Newtown Road, Worcester, to reach him not later than January 16, 1956.

J. C. INGRAM,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

WORCESTERSHIRE AND HEREFORDSHIRE DIVISION
SHIFT SUPERINTENDENT—REDDITCH DISTRICT

CANDIDATES should possess practical experience in the operation of modern Gas Works plant.

The salary for the post will be within Grade 7 (£620-£700 per annum) of the National Salary Scales for Gas Staffs.

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to Mr. C. F. W. Rendle, Divisional General Manager, West Midlands Gas Board, Newtown Road, Worcester, to reach him not later than January 16, 1956.

J. C. INGRAM,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

WORCESTERSHIRE AND HEREFORDSHIRE DIVISION
WORKS FOREMAN—WORCESTER DISTRICT

CANDIDATES should have good general gasworks experience and will be responsible for supervision of labour, time allocation for wage purposes, control of movement of materials and for works cleanliness.

The salary will be within Grade 6 (£565-£645 per annum) of the National Salary Scales for Gas Staffs.

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to Mr. C. F. W. Rendle, Divisional General Manager, West Midlands Gas Board, Newtown Road, Worcester, to reach him not later than January 16, 1956.

J. C. INGRAM,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

NORTH STAFFORDSHIRE DIVISION
ENGINEER AND MANAGER
LEEK DISTRICT

CANDIDATES should be qualified Gas Engineers and possess the ability to administer all departments of a 600 million cubic feet per annum undertaking.

The salary will be £1,150 per annum.

A house is available at a reasonable rental.

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to the Industrial Relations Officer, West Midlands Gas Board, 6, Augustus Road, Edgbaston, Birmingham, 15, to reach him not later than January 14, 1956.

J. C. INGRAM,
Secretary to the Board.

WEST MIDLANDS GAS BOARD

WALSALL AND DISTRICT DIVISION
SENIOR CHEMIST—CANNOCK GROUP

CANDIDATES, male or female, should have had a comprehensive training and experience in all aspects of chemical control of Gasworks plant. A recognised qualification in chemistry would be an advantage.

The salary will be within Grade 7 (Male: £620-£700 per annum; Female: £503-£567 per annum) of the National Salary Scales.

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to Mr. F. Harvey, Divisional General Manager, West Midlands Gas Board, Walsall Factory Estate, Tame Bridge, Walsall, to reach him not later than January 17, 1956.

J. C. INGRAM,
Secretary to the Board.

MINISTRY OF HOUSING AND LOCAL GOVERNMENT: INSPECTOR OF ALKALI, ETC., WORKS. The Civil Service Commissioners invite applications from men for a pensionable post as Inspector under the Alkali, etc., Works Regulations Act, 1906. Headquarters in Bristol, but considerable travelling involved. Age at least 35 on December 1, 1955. Candidates must be university graduates in science or technology and preferably also Corporate Members of the Institution of Chemical Engineers or Fellows or Associates of the Royal Institute of Chemistry, but exceptionally a candidate possessing other appropriate qualifications and of outstanding ability may be admitted. A wide working experience of the heavy chemical and related industries is essential. Starting pay (for 45½ hour week) £1,293 at age 35 up to £1,375 at 37 (exceptionally, higher at 37 or over if outstandingly well-qualified). Inclusive maximum, £1,577.

Application form and particulars from Civil Service Commission, Scientific Branch, 30, Old Burlington Street, London, W.1, quoting No. S4541/56. Applications to be returned by January 31, 1956.

PLANT FOR SALE & WANTED

FOR SALE: NEW GAS-FIRED BOILER by Hartley & Sugden. 160 lbs./hour at 80 lbs. p.s.i., complete with chimney, spare burner and controls. Original purchase price was £419. Our price £200. W. H. COLLINGBOURNE & CO., LTD., 1481, Stratford Road, Birmingham, 28. Phone: Shirley 3303.

LABORATORY Gas Holder required. Approximately 100 cu.ft. capacity. Apply: No. 272, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

CONTRACTS OPEN

URBAN DISTRICT COUNCIL OF NEWRY

(GAS DEPARTMENT)
TENDER FOR SUPPLIES

THE Gas Committee of the above Council invite Tenders for the supply and delivery of specified quantities of Galvanised Iron Tubing and Fittings, Brass Tubing and Fittings, Copper, Tubing, and Sundry Requisites.

Itemised Schedule of Materials and Form of Tender can be obtained on application from the Gas Offices, Kilmorey Street, Newry (N.I.).

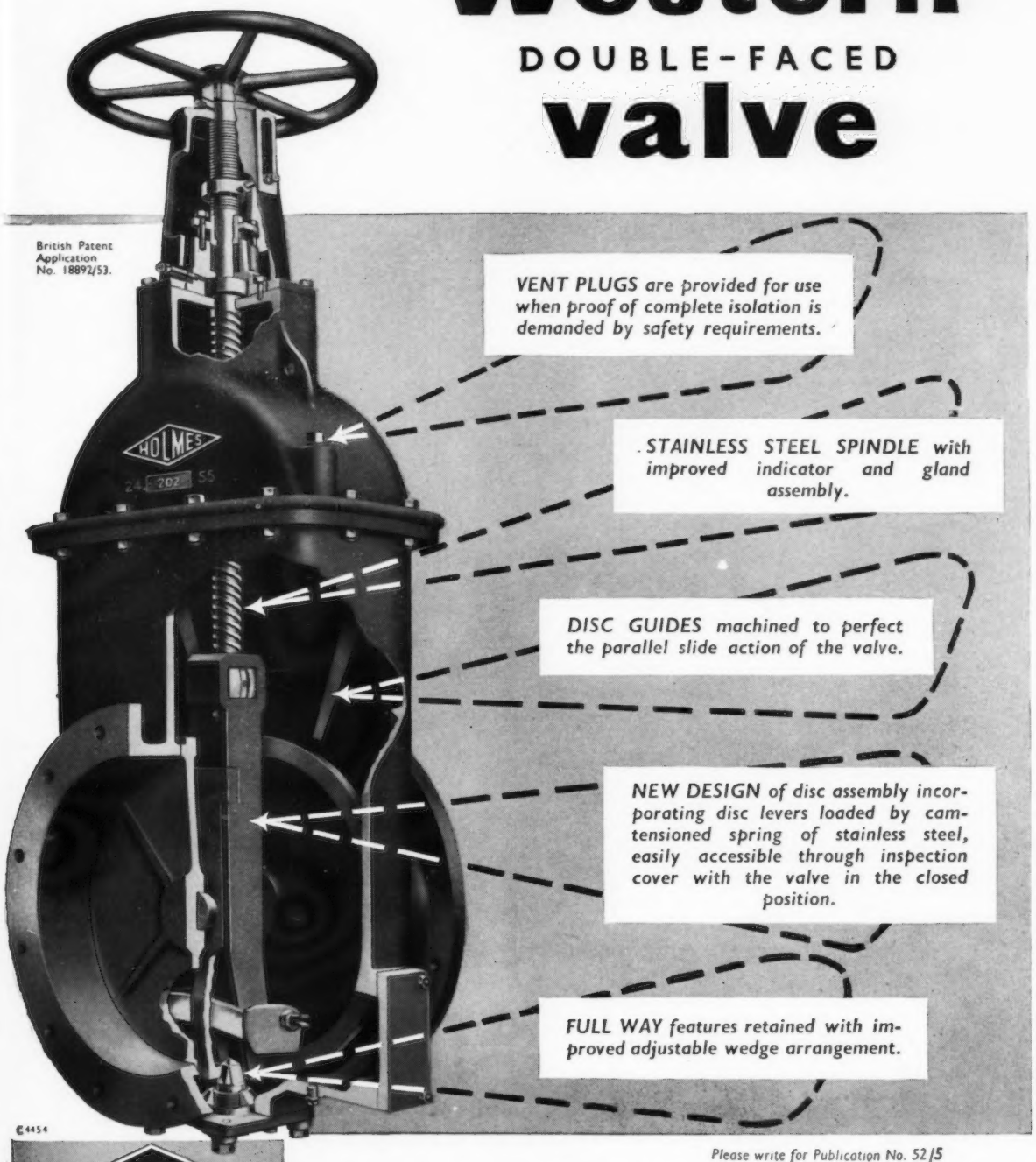
Sealed Tenders, endorsed 'Tenders for Supplies' must be lodged with the undersigned not later than 12 o'clock noon on Saturday, January 28, 1956.

M. MAGUIRE,
Secretary.

The
LIMIT OF EFFICIENCY CAN BE REACHED
by the use of
LUX
GAS PURIFYING MATERIAL

Sole Importers:
HARRISONS (London) LIMITED
66, Mark Lane, LONDON, E.C.3
Telegrams: Birchrock, London
Telephone: ROYal 3120

*THE RE-DESIGNED Western DOUBLE-FACED valve



British Patent Application No. 18892/53.

VENT PLUGS are provided for use when proof of complete isolation is demanded by safety requirements.

STAINLESS STEEL SPINDLE with improved indicator and gland assembly.

DISC GUIDES machined to perfect the parallel slide action of the valve.

NEW DESIGN of disc assembly incorporating disc levers loaded by cam-tensioned spring of stainless steel, easily accessible through inspection cover with the valve in the closed position.

FULL WAY features retained with improved adjustable wedge arrangement.

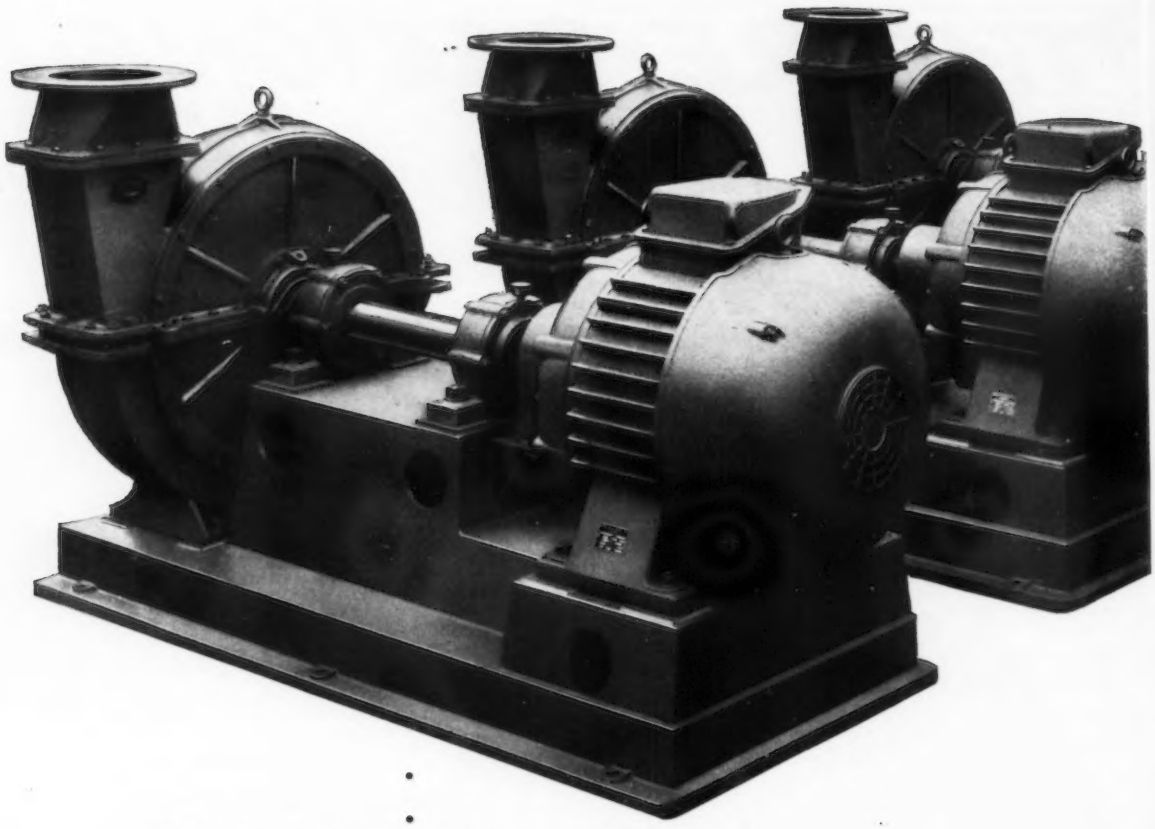
C4454

Please write for Publication No. 52/5

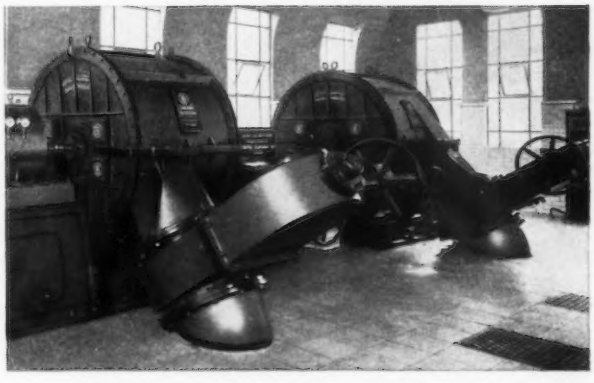
FOUNDED 1850 HOLMES HUDDERSFIELD

W. C. HOLMES & CO. LTD.

HUDDERSFIELD · LONDON · BIRMINGHAM



Gas Boosters?



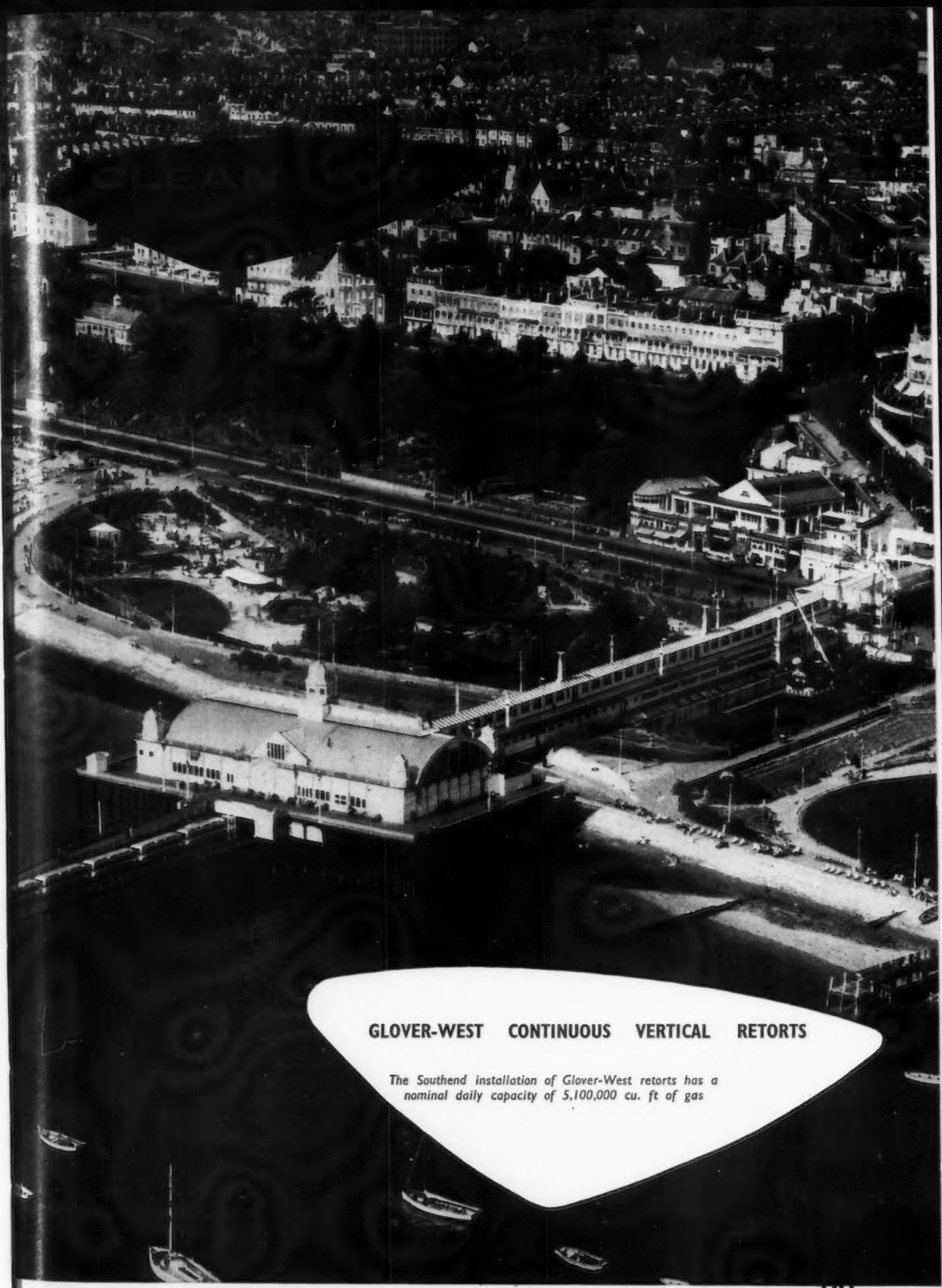
EXAMPLES of gas boosting fans with cast iron casings are illustrated here. They represent the results of special attention to the design and development of robust, trouble-free boosters over the years. This experience provides fans for handling volumes of 5,000 to 1½ million cubic feet of gas per hour at pressures up to several pounds per square inch.
When the time comes you'll find there's no easier way to solve your air or gas moving problem than to put it to Keith Blackman.

contact **Keith Blackman Ltd**

MILL MEAD ROAD · LONDON · N17 · TOTtenham 4522

T.A.7225/611

Registered as a Newspaper. Printed by STRAKER BROTHERS LTD., E.C.2. for WALTER KING LIMITED, 11, BOLT COURT, FLEET ST., LONDON, E.C.4., Wednesday, January 4, 1956



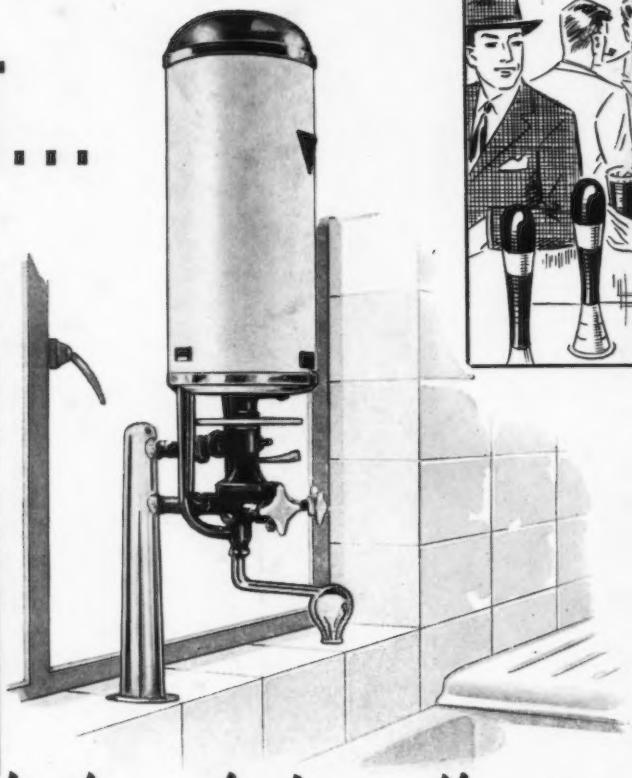
GLOVER-WEST CONTINUOUS VERTICAL RETORTS

The Southend installation of Glover-West retorts has a nominal daily capacity of 5,100,000 cu. ft of gas

WEST'S GAS IMPROVEMENT CO. LTD *MILES PLATTING · MANCHESTER 10*

London: Columbia House, Aldwych, W.C.2 *C.O.L. Div: Chandos House, Buckingham Gate, S.W.1*

There's always room for an ASCOT...



...with the tubular pillar support!

MORE and more plumbers, builders and architects nowadays are recommending the specially designed Ascot pillar support which enables the famous Ascot sink water heaters of the 503 range and the Boiling Water Heater type RS.52/1, to be fitted on almost any horizontal surface.

Designed as an alternative to conventional wall-fixing, the pillar support can be easily fixed on bar or counter tops, window sills and other flat surfaces. It obviates unsightly external pipe runs — gas and water connections are concealed.

The pillar support, which is finished in high-grade chromium plate, is ideal for licensees and caterers as well as for housewives whose kitchens have large window areas and correspondingly less wall space.

(When the Ascot Boiling Water Heater, type RS52/1 is used on a pillar support, an eccentric adaptor and lining must be used — Ascot part Nos. 6157/1Z and 0055/4X).

ASCOT

ALWAYS LEADS

ASCOT GAS WATER HEATERS LTD., 255 NORTH CIRCULAR ROAD, LONDON, N.W.10

WHG/A209